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ABSTRACT

This final report of a research project in vocational education, conducted under Part C of Public Law 90-576, will be useful to teachers, administrators, and teacher educators charged with curriculum or course development in vocational agriculture. The objective of this research project was to place curriculum development activities in vocational agriculture on a factual basis through the use of scientific research methodology. In order to develop a core curriculum, educational objectives, innovative teaching techniques, and differentiated staffing patterns for agricultural and agribusiness curriculums, a questionnaire was constructed after a literature review in order to appraise the knowledge and skills of 262 agribusiness personnel, 122 educational personnel, 200 farmers, and 712 vocational agriculture students. A second questionnaire collected data for implementing career education from 22 secondary and post-secondary teachers of agriculture. A third questionnaire was developed concerning career education and administered to 27 leaders in vocational agriculture. Characteristics of the interviewees are included, and a wide range of resource materials is provided. (AG)

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Final Report

CORE CURRICULUM FOR AGRICULTURE AND AGRIBUSINESS ON ALL LEVELS OF EDUCATION

Research Project in Vocational Education
Conducted Under
Part C of Public Law 90–576

Obed L. Snowden, Project Director
Mississippi State University
State College, Mississippi

June 1972

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Final Report

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Final Report

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Research Project in Vocational Education
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The project reported herein is being performed utilizing funds made available to the State of Mississippi under provisions of Part C of Public Law 90-576 administered by the Office of Education, U. S. Department of Health, Education, and Welfare.

Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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June 1972

PREFACE

Agricultural educators and others have long been confronted with continual development of a vocational agriculture curriculum which remained germane to the ever-changing world of work. Some of these efforts have utilized a more or less "fly-by-the-seat-of-the-pants" technique to curriculum development. In too many cases, hunches, casual observations, intuition, or out-right guesses have served as a basis for curriculum development and/or change. This research project attempted to place curriculum development activities in vocational agriculture on a factual base through the use of scientific or acceptable research methodology.

In the study considerable emphasis was placed upon recording the opinions and evaluations of competent persons vitally concerned with the vocational agriculture curriculum; namely, agribusiness personnel, farmers, educational personnel, and students. The information obtained helped determine how curriculum components affected job performance. These data also served as a basis for developing a core curriculum for agriculture and agribusiness which should prove invaluable for vocational agriculture teachers in developing their local course content for vocational agriculture classes.

The research report attempts to capture unique and innovative teaching techniques and differentiated staffing patterns to successfully implement the core curriculums in vocational agriculture. Emphasis is placed upon developing "cores" in agriculture at the elementary, junior high, senior high and post-secondary levels. These "cores" have special implications for the career education concept which currently is in the educational spotlight. They may well serve as important components to any school system attempting to implement the career education concept.

This publication may be the means of formulating new and/or revised strategies for improving the total vocational agriculture program through further curriculum development. The report should be of special interest to teachers, administrators, and teacher educators charged with curriculum and/or course development.

James F. Shill, Co-Director
Mississippi Research Coordinating Unit for Vocational-Technical Education

TABLE OF CONTENTS

	Page
PREFACE	iii
SUMMARY	1
I. INTRODUCTION	7
The Problem and Objectives	8
Research Methodology	9
Theoretical Frame of Reference	9
Research Design and Method	9
Analytical Design and Method	15
II. FINDINGS	17
Characteristics Information	17
Characteristics of Agribusiness Personnel	17
Characteristics of Educational Personnel	19
Characteristics of Farmers	20
Characteristics of Secondary School Students	22
Curricula Appraisal	23
Vocational Aspect of the Curricula	23
Agricultural Business Management	23
Plant Science	24
Agricultural Mechanics	25
Animal Science	27
Soil Science	28
Leadership Development	29
Recapitulation of Group Responses Toward the Vocational Aspect of the Curriculum	29

TABLE OF CONTENTS (continued)

Page

Environmental Aspect of the Curricula. 37

Agricultural Business Management. 37

Animal Science. 37

Agricultural Mechanics. 37

Plant Science 40

Leadership Development. 41

Soil Science. 42

Recapitulation of Group Responses Toward the Environmental Aspect of the Curriculum. 42

Composite Ratings of the Curriculum 49

Vocational Aspect of the Curriculum. 49

Environmental Aspect of the Curriculum 52

Appraisal of Staffing Patterns and Methodology of Teaching Agricultural and Agribusiness Occupations 56

Staffing Patterns for Agricultural and Agribusiness Programs. 56

Methods in Teaching Agricultural and Agribusiness Knowledge and Skill Areas 58

Opinions of the Jury of Experts Toward the Proposed Core Curriculum for Agricultural and Agribusiness Occupations on All Levels of Education . 60

Level I - Career Awareness 61

Level II - Career Exploration. 63

Level III - Preparatory Period 66

Level IV - Post-Secondary Period 69

TABLE OF CONTENTS (continued)

		Page
III.	CONCLUSIONS AND RECOMMENDATIONS	73
IV.	GLOSSARY OF TERMS	86
V.	BIBLIOGRAPHY.	88
VI.	APENDICES	91
	Appendix A.	92
	Appendix B.	94
	Appendix C.	99
	Appendix D.	105
	Appendix E.	112

LIST OF FIGURES AND TABLES

Figure

		Page
1.	Location of Counties Included in the Study. .	11
2.	Curriculum Model for Agricultural and Agribusiness Occupations (Model I).	81
3.	Curriculum Model for Agribusiness, Natural Resources, and Environmental Occupations (Model II).	82
4.	Schematic Diagram of Differentiated Staffing Pattern (Model III)	83
5.	Schematic Diagram of Differentiated Staffing Pattern (Model IV)	84
6.	Schematic Diagram of Differentiated Staffing Pattern (Model V).	85

Table

1.	Characteristics of Agribusiness Personnel . .	18
2.	Characteristics of Educational Personnel. . .	19
3.	Characteristics of Farmers.	21
4.	Characteristics of Secondary School Students.	22
5.	Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Agricultural Business Management in Agricultural Occupations	24
6.	Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Plant Science in Agricultural Occupations	25
7.	Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Agricul-Mechanics in Agricultural Occupations	26

LIST OF FIGURES AND TABLES (continued)

Table Page

8. Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Animal Science in Agricultural Occupations. 27

9. Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Soil Science in Agricultural Occupations. 28

10. Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Leadership Development in Agricultural Occupations . 29

11. Recapitulation of Group Responses Toward the Vocational Aspect of the Curriculum. 30

12. Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Agricultural Business Management in Maintaining a Wholesome Environment. 38

13. Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Animal Science in Maintaining a Wholesome Environment 38

14. Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Agricultural Mechanics in Maintaining a Wholesome Environment. 39

15. Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students and Farmers Concerning the Importance of Plant Science in Maintaining a Wholesome Environment 40

LIST OF FIGURES AND TABLE (continued)

Table — Page

16. Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students and Farmers Concerning the Importance of Leadership Development in Maintaining a Wholesome Environment. 41

17. Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students and Farmers Concerning the Importance of Soil Science in Maintaining a Wholesome Environment 42

18. Recapitulation of Group Responses Toward the Environmental Aspect of the Curriculum 43

19. Composite Ratings of the Vocational Aspect of the Curricula. 50

20. Composite Ratings of the Environmental Aspect of the Curricula 53

21. Appraisal of Staffing Patterns for Agricultural and Agribusiness Programs by Teachers of Agriculture 57

22. Appraisal of Methods for Teaching Agricultural Subject Matter by Teachers of Agriculture 58

23. Ratings of Administrators, Curriculum Specialists, and Vocational Agriculture Teachers Concerning Level I of the Proposed Core Curriculum for Agricultural and Agribusiness Occupations. 61

24. Ratings of Administrators, Curriculum Specialists, and Vocational Agriculture Teachers Concerning Level II of the Proposed Core Curriculum for Agricultural and Agribusiness Occupations. 63

LIST OF FIGURES AND TABLES (continued)

Table

Page

25. Ratings of Administrators, Curriculum Specialists, and Vocational Agriculture Teachers Concerning Level III of the Proposed Core Curriculum for Agricultural and Agribusiness Occupations. 66

26. Ratings of Administrators, Curriculum Specialists, and Vocational Agriculture Teachers Concerning Level IV of the Proposed Core Curriculum for Agricultural and Agribusiness Occupations. 70

Summary

Purposes and Objectives

The primary purpose for the study was to find common knowledge and skill areas needed by all persons engaged in or preparing to engage in agricultural or agri-related occupations. Specific objectives of the study were:

1. To determine and evaluate the individual training needs of persons who are working in, or preparing to work in Agribusiness, Natural Resources, and Environmental Control Occupations with reference to their socio-civic and recreational activities; and their educational and personal qualifications for successfully entering or making progress in some level of employment in Agribusiness, Natural Resources, and Environmental Control Occupations.

2. To determine and evaluate the skills and other competencies needed by persons preparing to enter or who have already entered some type of Agribusiness, Natural Resources, and Environmental Control Occupations.

3. To develop educational objectives based on the training needs, skills, and/or other competencies of persons who are working in, or preparing to work in agricultural or agri-related occupations.

4. To develop a core curriculum based on the educational objectives derived from the training needs, skills, and/or competencies of persons working or preparing to work in agricultural and agri-related occupations.

5. To develop innovative teaching techniques and differentiated staffing patterns to successfully implement the core curriculums developed for persons planning careers in agricultural or agri-related occupations.

Methods and Procedures

In undertaking the project several assumptions were made about the vocational agriculture programs in Mississippi. It was assumed that vocational agriculture students were being trained in the areas designated by the Office of Health, Education, and Welfare. It was further hypothesized that individuals engaged in or preparing for agricultural or agri-related occupations were capable of evaluating the comprehensive

needs of their chosen occupation and environment. It was also assumed that teachers and administrators were aware of the overall agricultural needs of their school, community, and its citizenry.

In the design of the methodology used in this research, utilization of a genuine sample of the State's population serving the sector of economy directly associated with agricultural and agri-related occupations was involved. Whereas in the past only school personnel were involved in preparing the courses taught in agriculture. Moreover, these courses were confined mostly to secondary school grades and adult classes in the area of production agriculture. This project was designed to obtain and make use of the opinions of not only vocational agriculture teachers but also: (1) school principals and superintendents, (2) agribusinessmen, (3) adult and young farmers, and (4) secondary school students enrolled in the agricultural courses being offered.

There were four main steps used in securing data for accomplishing the objectives for the study. First, after a careful review of literature, a questionnaire was constructed to gather responses from the groups previously mentioned (Appendices B & C). This questionnaire included six areas of subject matter normally taught by vocational agriculture teachers. These areas were: (1) animal science, (2) plant science, (3) soil science, (4) agricultural business management, (5) leadership development, and (6) agricultural mechanics (Appendix C). This instrument was developed to appraise the knowledge and skill areas needed by the interviewees in two aspects, vocational and environmental.

Secondly, a twenty percent random stratified sample of counties in the eight economic areas of Mississippi was taken. After the selection of sixteen counties within the State, lists of agribusinesses, schools, and school personnel were compiled for each county included in the study. After compilation of the lists, contacts were made with a cross-section of the businesses, the educational personnel (superintendents, principals, and vocational agriculture teachers) via mail to obtain their willingness or unwillingness to participate in the study (Appendix A). After receiving a positive response, appointments were made and reactions were gathered from the different groups with the help of local vocational agriculture personnel. A total of 262 agribusiness personnel, 122 educational personnel, 200 farmers, and 712 students responded to the basic questionnaire (Appendix C).

During the period used to summarize the data from the basic instrument, a second questionnaire was developed to appraise the different methods of teaching and several types

of differentiated staffing patterns (Appendix C) for implementing the Agribusiness, Natural Resources, and Enviromental Control Occupations service area in career education. A total of 22 secondary and post-secondary teachers of agriculture responded to the questionnaire.

Once the basic data were summarized, a third data gathering instrument (Appendix E) was constructed. This instrument was developed by both project staff and noted persons from the respective knowledge and skill areas. An outline of different subject matter for each area in the basic instrument was compiled. The model for career education developed by the Office of Health, Education, and Welfare was used as a basic guide. This material was developed for four different levels which are: Level I -- Elementary, including grades K-6; Level II -- Junior High, including grades 7-8; Level III -- Senior High, including grades 9-12; and Level IV -- Post-Secondary, including grades 13-14. Upon completion of the questionnaire, a jury composed of vocational directors, county superintendents, principals, vocational agriculture teachers, state supervisory personnel, and curriculum specialists were contacted and asked to respond to the instrument. These respondents were asked if this material could and should be taught on the proposed levels in career education. A total of 27 persons reacted to the instrument.

Analytical Design and Method

Information was taken from individual questionnaires and coded on IBM code sheets. Statistical tabulations (frequencies, percentage, arithmetic means, ranks, modal groups, and ranges) were performed on electronic computers in the Mississippi State University Computing Center.

Findings

Characteristics Information

The study revealed the following outstanding characteristics of agribusiness personnel. They were: (1) approximately 40 percent of the agribusiness personnel included in the study were managers; (2) the smallest percentage (1.91 percent) were unskilled workers; (3) the greatest number (167) of the agribusiness personnel had gained their training on-the-job; (4) only 2 (.76 percent) had gained their training in post-secondary trade schools; and (5) above 80 percent of the persons had a farm background.

Characteristics of educational personnel included: (1) above 30 percent were vocational agriculture teachers; (2) 37 of the educational personnel held titles other than principals or superintendents with a great percentage of them being administrative assistants and/or vocational program coordinators; (3) above 25 percent were principals; (4) 9 were superintendents; (5) 65.57 percent of the personnel were working in a county unit system with more than 1500 pupils; and (6) more than 74 percent had farm backgrounds.

Characteristics of farmers revealed: (1) the greatest percentage (42.50 percent) included in the study were beef cattle farmers; (2) almost 40 percent were row-crop farmers; (3) 28 percent owned farms larger than 500 acres; (4) 25 percent owned farms less than 100 acres in size; (5) 35.5 percent of the farmers indicated having had three or more years of vocational agriculture in high school; while, 34.5 percent reported having no vocational agriculture training while in high school; and (6) 88.5 percent of the farmers had farm backgrounds.

Characteristics of students included in the study were: (1) 32.02 percent had had two years of vocational training; (2) 24.44 percent had three or more years of vocational agriculture training; (3) 64.75 percent of the students had farm backgrounds; (4) 23.17 percent of the students had gained agricultural experience via a full-time farm; (5) 49.58 percent of the students indicated gaining agricultural experience on a part-time farm; and (6) 5.06 percent of the students had experience in agribusiness.

Curricular Appraisal

The first aspect to be considered was the vocational aspect of the curriculum. All groups included in the study agreed that the agricultural business management module was more essential in both the vocational and environmental aspects of the curriculum, but at different degrees. Items within this module receiving the higher ratings were: (1) marketing (buying and selling); (2) accounting and money management; and (3) budgeting. Items within this module tended to receive highly significant and significant ratings from all groups for both the vocational and environmental aspects of the curriculum.

Farmers and school personnel tended to rate the modules plant science, soil science, and animal science higher than did agribusiness personnel or students. Certain areas within the agricultural mechanics module (operating farm machinery and power mechanics) were considered more important by

agribusiness personnel, educational personnel, and farmers.

The module receiving the lowest rating in the vocational aspect of the curriculum was leadership development. Ratings for this module ranged from slightly significant to significant. Thus, it was evident that ratings for all the modules were fairly close. None of the items within any module received a rating of insignificant (1.50 - 1.0). In appraising the vocational aspect of the curriculum ratings of agribusiness personnel and students tended to be lower than ratings of the farmers and educational personnel. It must be remembered, as was found in this study, that agribusinesses are dependent upon the farmers and that without production agriculture there is little if any agribusiness in the said area.

In appraising the environmental aspect of the curriculum the same groups and items were used. Again as was previously mentioned, the agricultural business management module was deemed the most important of the six appraised. The animal science module followed the aforementioned module in importance. Only two items within this module rated above 2.1 (significant). Thus, ratings for the environmental aspect of the curriculum tended to be somewhat lower than those of the vocational aspect. The module receiving the lowest rating for the environmental aspect was soil science with ratings of slightly significant (1.51 - 2.0). Thus, no item received ratings of insignificant. Generally, the ratings of the agribusiness personnel tended to be lower than ratings of other groups included in the study.

None of the items included in the appraisal received an insignificant rating in either aspect of the curriculum. Thus, all items could be included in the curriculum, but some would receive less emphasis in the skill development period.

Appraisal of Staffing Patterns and Methodology of Teaching for Agriculture and Agribusiness Occupations

It must be remembered that the staffing patterns appraised were evaluated for their workability and/or efficiency in implementing the Agribusiness, Natural Resources and Environmental Control Occupations service area in career education. It was the opinion of those questioned that some form of differentiated staffing would be necessary. The pattern receiving the highest rating was: a curriculum council composed of specialists who develop curricular materials, tests, etc., and a master teacher who supervises the teacher instructors who are aided by non-credentialed instructional and technical assistants could effectively implement and carry out a total

program of vocational education in a school system. It was the opinion of the teachers that a one teacher agricultural department could not coordinate the implementation of the Agribusiness, Natural Resources and Environmental Control Occupations service area in career education and properly carry out his other teaching and supervisory duties.

Methods in Teaching Agribusiness and Agricultural Knowledge and Skill Areas

Teachers' reactions to the different methods of teaching were that most innovative types of teaching could help maximize the achievement of educational objectives. Teachers reactions pointed to the fact that the total curriculum should be arranged in small detailed units or modules to enhance the teaching-learning process. The reaction to the lecture method of teaching received the lowest rating.

Opinions of the Jury of Experts Toward the Proposed Core Curriculum

The reactions of the jury to the outlined material for inclusion in the career education curriculum were very positive. In fact, all items for each level received ratings of a mean of 4.21 or better out of a possible 5 (strongly agree) with the exception of 4 items. Thus, all items proposed in the curriculum should be included, but some items should have more emphasis than others. The jury of experts was not asked to react to who should teach each area. The results of the summary of opinions of the jury indicate that this material and/or experiences should be a part of the curriculum for persons planning careers in agricultural or agri-related occupations.

I. INTRODUCTION

This report represents the results of research which was designed as a method of identifying "A Core Curriculum for Agriculture and Agribusiness on All Levels of Education." The core curriculum, which is proposed in the report also represents 'novel' method of identifying priorities in course content for all grade levels in our educational system.

This study also reveals the reactions of a select group of agriculture teachers toward some innovative methods in teaching the aforementioned "core". It further presents some patterns of differentiated staffing for schools utilizing such a core curriculum in implementing the Agribusiness, Nattural Resources, and Environmental Control Occupations service area in career education. Finally, the study illustrates how a facet of career-centered education can be planned and implemented successfully, utilizing the core curriculum in agriculture and agribusiness in all grade levels of education from first grade through post-secondary. To the project staff's knowledge no such core curriculum for agriculture and agribusiness has before been developed, using as a basis the knowledge and skill areas needed by both "grass roots" people and professionals as a basis. It is believed by the project staff that the findings of this study can be used in developing subject matter materials for each grade level and used successfully in implementing the Agribusiness, Natural Resources, and Environmental Control Occupations service area in the career education concept of education.

THE PROBLEM AND OBJECTIVES

With changes occurring in the organization and operation of instructional programs in vocational agriculture in Mississippi, there too have been changes in philosophies and educational concepts as to the desired outcome of one's educational effort. With the advent of the career education concept throughout the United States, the problem of what to teach and when to teach it has become major questions. With this in mind this study was designed to determine the educational needs of individuals engaged in or preparing to engage in agriculture and agri-related occupations available to them in the agricultural world of today.

The research was directed toward the determination of resources available for incorporating into the development of core curriculums for agriculture for all levels of education, including not only basic content, but also innovations in curriculums, teaching methods, staffing patterns, and outreach in the schools.

The primary purpose of the study was to find the educational needs of individuals who are engaged in or preparing to engage in Agribusiness, Natural Resources, and Environmental Control Occupations, and what type or types of core curriculums would best meet their individual needs. Specific objectives for the study were as follows:

1. To determine and evaluate the individual training needs of persons who are working in, or preparing to work in Agribusiness and Natural Resources, and Environmental Control Occupations with reference to their socio-civic and recreational activities; and their educational and personal qualifications for successfully entering or making progress in some level of employment in such occupations.

2. To identify and evaluate the skills and other competencies needed by persons preparing to enter or who have already entered some type of Agribusiness, Natural Resources, and Environmental Control Occupations.

3. To develop educational objectives based on the training needs, skills, and/or other competencies of persons who are working in, or preparing to work in agricultural or agri-related occupations.

4. To develop core curriculums based on the educational objectives derived from the training needs, skills, and/or competencies of persons working or preparing to work in agricultural and agri-related occupations.

5. To develop innovative teaching techniques and differentiated staffing patterns to implement successfully the core curriculums developed for persons planning careers in Agribusiness, Natural Resources and Environmental Control Occupations.

Research Methodology

Theoretical Frame of Reference

For this research it was hypothesized that teachers of vocational agriculture were training secondary students in the areas designated by the Office of Health, Education and Welfare. It was further assumed that individuals engaged in or preparing to engage in agriculture and/or agri-related occupations were capable of evaluating comprehensive needs of their chosen occupation. It also was assumed that teachers and administrators were aware of the overall agricultural needs of their school, community, and its citizenry.

Research Design and Method

The first phase of the research was spent gathering data relevant to the proposed study. With the available information an instrument to evaluate knowledge and skill areas needed by persons involved in or preparing to enter into an agricultural or agri-related occupation was developed.

The instrument consisted of the following:

(1) a characteristic page for each group (Appendix B) and

(2) agricultural subject matter areas (Appendix C).

Included in the subject matter areas were two aspects of education:

(1) The vocational aspect; and

(2) The environmental aspect. (See Appendix C)

These were to be assessed separately by each interviewee.

A map of Mississippi's economic areas (See Figure I) was obtained and a 20-percent random stratified sample of counties within the state was chosen, along with alternate counties in each area.

After final selection of counties, lists of agribusinesses, schools, and school personnel were compiled. Several sources were used to compile a more composite list of agribusinesses as follows:

(1) The Mississippi Employment Security Commission, (2) the Mississippi Forestry Commission, (3) the Mid-South Farm Equipment Association, (4) the Deep-South Farm and Power Equipment Association, (5) the Mississippi Department of Agriculture and Commerce; and where possible, The Chambers of Commerce were included. The lists of schools with vocational agriculture programs and school personnel were determined by two main sources: These were (1) The Educational Directory 1970-71[1] and (2) the Vocational Agriculture Teacher's Directory, 1971-72.[2]

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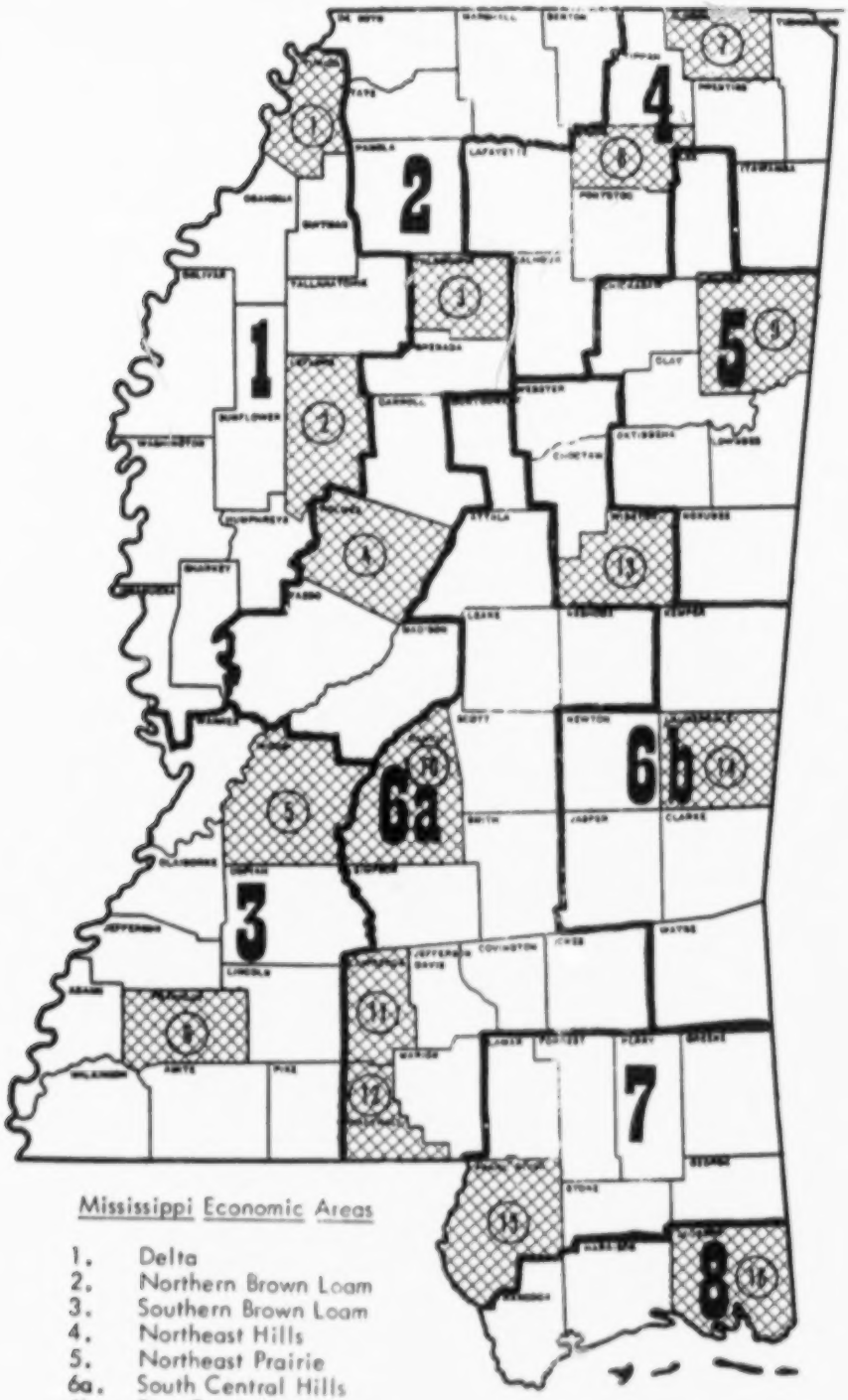
[1]State Department of Education, Mississippi School Bulletin, Educational Directory, 1970-71 (Jackson, Miss.: Division of Instruction, 1971).

[2]State Department of Education, Vocational Agriculture Teacher's Directory, 1971-72 (Jackson, Miss.: Division of Vocational Technical Education, 1971).

FIGURE I
COUNTIES INCLUDED IN THE STUDY



Mississippi Economic Areas

1. Delta
2. Northern Brown Loam
3. Southern Brown Loam
4. Northeast Hills
5. Northeast Prairie
6a. South Central Hills
6b. East Central Hills
7. Coastal Plains
8. Gulf Coast

*Source of Map: Agricultural Economics Department
Mississippi State University

Upon compilation of lists contacts were made with agribusiness firms, school administrators (superintendents and principals), and vocational agriculture teachers via mail. The following is a list of agribusinesses and their location who participated in the study.

AGRIBUSINESS	LOCATION
Mosby's Dairies, Inc.	Meadville
Franklin Co. Co-Op	Meadville
Holland's Feed Mill	Meadville
MFC Services	Raymond
Callaway's Yard & Garden Center	Jackson
U.S.D.A.	Jackson
Jackson Union Stock Yards	Jackson
Adams Foods, Inc.	Jackson
D.B.A. Johnson Oil Co.	Jackson
Gaddis Equipment Co.	Jackson
Itta Bena Compress Co.	Itta Bena
Farmer's Supply Co-Op	Greenwood
Auto & Tractor Parts Co., Inc.	Greenwood
Greenwood Ford Tractor Sales, Inc.	Greenwood
Wade, Inc.	Greenwood
S. & N. Sprayer Co., Inc.	Greenwood
Staple Cotton Services Assn.	Greenwood
Johnson Implement Co.	Greenwood
Riverside Chemical Co.	Greenwood
Fred James Implement Co. Inc.	Greenwood
Shipley Grain Co.	Greenwood
Rick's Motor Service	Greenwood
Deltawood Forest Products Corp.	Monticello
Riverside Stockyards, Inc.	Monticello
Riley's Groc. & Supply	New Hebron
Patterson Bros. Farm Supply	Monticello
PCA-Production Credit Association	Meridian
Meridian Stock Yards	Meridian
Meridian Packing Co.	Meridian
Brookshire Ice-Cream Co.	Meridian
Mosby's Sausage Farm	Meridian
McInnis Laboratories	Meridian
Borden, Inc.	Meridian
Tung Ridy	Poplarville
Dossett Farm Equipment	Picayune
Poplarville Tractor Sales Co.	Poplarville
Pearl River Farmers Co-Op	Poplarville
Lovitt Equip. Co.	Hattiesburg
Forrest Co. Co-Op	Hattiesburg
Swift Agricultural Chemical Corp.	Tylertown
Swift Farm Service Center	Tylertown

Walthall Co. Co-Op	Tylertown
Brumfield Meat & Processing	Tylertown
Pigotts Truck & Tractor Co.	Tylertown
Mitchell Tractor Co.	Tylertown
Hollandale's Feed & Seed	Tylertown
T & T Feed Mill	Thaxton
Pontotoc Co. Co-Op	Pontotoc
Riverside of Pontotoc Feed Mill	Pontotoc
Smithville Butane Gas Co.	Smithville
Hamilton Milling Co.	Hamilton
Smithville Milling Co.	Smithville
Farmers Supply Co.	Amory
Davis Produce & Gro.	Hamilton
Monroe County Co-Op	Aberdeen
International Minerals and Chemical Co.	Amory
Ingram & Allen Farm Supply	Water Valley
Shuffield's Repair Shop	Water Valley
Peoples Wholesale	Water Valley
M & W Tractor Co.	Water Valley
Dixie-Feed & Seed Store	Ocean Springs
International Paper Co.	Pascagoula
Big Point Feed & Seed	Moss Point
International Paper	Brandon
Rankin Co. Co-Op	Brandon
Brandon Implement Co.	Brandon
Capitol Feeders Supply	Brandon
Campbell Roofing & Metals Works, Inc.	Brandon
Pickens Co-Op	Pickens
Peaster Tractor Co.	Lexington
Delta-Hill Farmers Cooperative	Lexington
Tri-Co. Co-Op	Pickens
Coker's Pedigreed Seed Co.	Tunica
Whittington Wholesale	Tunica
Planters Tractor and Implement Co.	Tunica
Farm Equipment Co., Inc.	Tunica
Staple Cotton Services Assn.	Tunica
J. I. Case Co.	Tunica
Helena Chemical Co.	Tunica
Graham & Sneed Farm Supply	New Albany
Union Co. Co-Op (AAL)	New Albany
Hill's International	New Albany
Morris Feed Mill	New Albany
Ward Farm Service	Louisville
Winston Co. Co-Op	Louisville
Quality Feed Mill	Louisville
Watkins Tractor Co.	Louisville
Lee Bros. Tractor Co.	Louisville
Lovorn Tractor Co.	Louisville

The following is a list of schools who participated in the study.

SCHOOL	COUNTY
Alcorn Central High School	Alcorn
Biggersville High School	Alcorn
Franklin Co. High School	Franklin
Raymond High School	Hinds
Sumner Hill High School	Hinds
Durant High School	Holmes
Tchula High School	Holmes
East Central High School	Jackson
Vancleave High School	Jackson
Clarkdale High School	Lauderdale
West Lauderdale High School	Lauderdale
Monticello High School	Lawrence
New Hebron High School	Lawrence
Leflore High School	Leflore
Hamilton High School	Monroe
Smithville High School	Monroe
Pearl River Central High School	Pearl River
Poplarville Jr.-Sr. High School	Pearl River
Brandon High School	Rankin
Pelahatchie High School	Rankin
Rosa Fort High School	Tunica
West Union High School	Union
Tylertown High School	Winston
Louisville High School	Winston
Nanih Waiya High School	Winston
Water Valley High School	Yalobusha

A total of 122 school personnel, 262 agribusiness personnel, 200 farmers and 712 students was included in the study. Personal visits were made to schools to arrange interviews with second- and third-year students of vocational agriculture and to arrange the gathering of data from farmers by the vocational agriculture teachers. These visits also were used to get the response of administrators and teachers of vocational agriculture toward the data-gathering instruments used in the study. In most instances, personal interviews were made with agribusiness personnel and the assistance of the local vocational agriculture teacher or teachers.

After consultation among staff of the Agricultural Education Department and the Research Coordinating Unit, it was believed that staffing patterns and teaching methodology and/or techniques could best be evaluated by those persons directly associated with the educational process. This would include teachers of secondary and post-secondary agriculture programs

throughout the State of Mississippi. After reviewing both general and vocationally oriented materials, it was believed that both present and innovative examples of teaching techniques and staffing patterns should be evaluated. Also, it was believed that if the career education concept is to include Agribusiness, Natural Resources, and Environmental Control Education, that recommendations for subject matter, staffing patterns, and teaching techniques for the research project should be made to this effect.

Upon completion of the questionnaire, 22 teachers of agricultural subject matter were asked to respond to the questionnaire. The respondents represented a wide range of experiences and expertise in the field of agricultural education. This group included both secondary and post-secondary teachers from across the State.

Once hypotheses toward priorities in subject matter areas were validated, project personnel began outlining materials that could be included in the instructional process. These materials were assembled in order for a reaction panel to rate its necessity for inclusion in the curriculum. Thus, persons exhibiting expertise in the traditional educational process or Agribusiness, Natural Resources, and Environmental Control programs, could react to subject matter to be incorporated into the career education concept. The traditional organization of the school was classified into specific grade levels using the U.S. Office of Health, Education, and Welfare's Model as a guide. These levels are as follows: Level I (grades K-6) - Awareness Period; Level II (grades 7-8) - Career Exploration; Level III (grades 9-12) - Preparatory Period; Level IV - Post-Secondary or Technical.

Once the curriculum could be grouped into modules to form a core of subject matter for all levels of education, specific content within each module for each level of education could then be included in detail. Instead of finalizing the "arm chair research" the instrument was taken to the persons mentioned in the preceding paragraph. A total of 27 persons responded to the instrument. This group represented a wide range of experience. These opinions were used as a basis for validating conclusions and recommendations for agriculturally oriented subject matter to be included in the service area of Agribusiness and Natural Resources for career education.

Analytical Design and Method

Information on the completed questionnaires was transferred to International Business Machine (IBM) code sheets, and then to IBM cards for electronic computations. Tabulations were

performed on electronic computers in the Mississippi State University computing center. The statistical tabulations consisted of the computation of frequencies, percentages, arithmetic means, ranks, modal groupings, and ranges.

II. FINDINGS

This section of the report includes findings obtained from the data-gathering instrument used in the study. This section was divided into the following divisions: (1) characteristics information, (2) curricular appraisal, (3) appraisal of staffing patterns and methodology of teaching for agricultural and agribusiness occupations and (4) opinions of the jury of experts toward the proposed core curriculum for agricultural and agribusiness occupations on all levels of education.

Characteristics Information

In attempting to evaluate the needs and priorities for the Agribusiness, Natural Resources, and Environmental Control Curriculum, several groups were utilized. The following is a summation of characteristics of each group: (1) agribusiness personnel, (2) educational personnel, (3) farmers, and (4) secondary school students.

Characteristics of Agribusiness Personnel

As shown in Table 1, the following characteristics of persons employed in agribusiness were evaluated. They were as follows: (1) position of the interviewee; (2) area of employment; (3) type of job training; and (4) background.

Of those persons interviewed, 29 (11.07 percent) were professionals; 8 (3.05 percent) were technical personnel, 107 (40.84 percent) were managers; 16 (6.11 percent) were supervisors; 44 (16.79 percent) were salesmen; 11 (4.20 percent) were clerical personnel; 29 (11.07 percent) were skilled personnel; 13 (4.69 percent) were semi-skilled, and 5 (1.91 percent) were unskilled. Of those persons who replied, 40 (15.27 percent) were employed in production agriculture; 140 (53.44 percent) were employed in agricultural supplies and services; 28 (10.69 percent) were employed in agricultural products; 36 (13.74 percent) were employed in agricultural mechanics; 4 (1.53 percent) were employed in ornamental horticulture; 1 (.38 percent) was employed in agricultural resources; 4 (1.53 percent) were employed in forestry, and 9 (3.42 percent) did not respond.

While 46 (17.55 percent) of the agribusiness personnel did not reply to the question of job training, 167 (63.74 percent) indicated that they had received their training

Table 1.--Characteristics of Agribusiness Personnel

Item	Frequency	Percent
1. Interviewee's position is classified:		
a. Professional	29	11.07
b. Technical	8	3.05
c. Managerial	107	40.84
d. Supervisory	16	6.11
e. Sales	44	16.79
f. Clerical	11	4.20
g. Skilled Labor	29	11.07
h. Semi-skilled	13	4.96
i. Unskilled	5	1.91
j. No Answer	---	-----
2. Area of Employment:		
a. Production agriculture	40	15.27
b. Agricultural supplies/ services	140	53.44
c. Agricultural products	28	10.69
d. Agricultural mechanics	36	13.74
e. Ornamental horticulture	4	1.53
f. Agricultural resources	1	.38
g. Forestry	4	1.53
h. No Answer	9	4.17
3. Type of job training:		
a. On-job-training	167	63.74
b. Vocational agriculture in high school	42	16.04
c. Training in secondary technical school	5	1.91
d. Training in post-secondary trade school	2	.76
e. No Answer	46	17.55
4. Background:		
a. Farm	215	82.06
b. Rural non-farm	22	8.40
c. Urban-town	22	8.40
d. No Answer	3	1.14

on-the-job. Of those remaining, 42 (16.04 percent) had taken vocational agriculture in high school; 5 (1.91 percent) had received training in a secondary technical school, and 2 (.76 percent) had received training in post-secondary trade

schools. Of those responding to the question, 215 (82.40 percent) had farm backgrounds; 22 (8.40 percent) had rural non-farm backgrounds; 22 (8.40 percent) had urban backgrounds; and 3 (1.14 percent) did not respond.

Characteristics of Educational Personnel

As shown in Table 2, the following areas were examined: (1) position of interviewee; (2) type of school system; (3) size of attendance center; and (4) background. The

Table 2.--Characteristics of Educational Personnel.

Item	Frequency	Percent
1. Position of Interviewee:		
a. Superintendent	9	7.38
b. Principal	31	25.41
c. Vo-ag teacher	40	32.79
d. Other	37	30.32
e. No Answer	5	4.10
2. Type of school system:		
a. County unit system under 1500 pupils	24	19.67
b. County unit system 1501 or more pupils	80	65.57
c. Separate school district under 1500 pupils	4	3.28
d. Separate school district 1501 or more pupils	10	8.20
e. No Answer	4	3.28
3. Size of Attendance Center		
a. Attendance center under 600 pupils	25	20.49
b. Attendance center 601-900 pupils	38	31.15
c. Attendance center 901-or more pupils	41	33.61
d. No Answer	18	14.75
4. Background:		
a. Farm	91	74.59
b. Rural non-farm	21	17.21
c. Urban-town	9	7.38
d. No Answer	1	.82

position or title of the educational personnel were as follows: 9 (7.38 percent) were superintendents; 31 (25.41 percent) were principals; 40 (32.79 percent) were vocational agriculture teachers; 37 (30.32 percent) did not possess any of the preceding titles, but a large percentage was administrative assistants or vocational program coordinators. A total of 5 (4.10 percent) did not respond to the question.

Of the total response, 104 taught in county-unit systems of which 24 (19.67 percent) had enrollments of less than 1,500 students, while 80 (65.57 percent) had more than 1,500 pupils in their respective systems. The remaining 14 taught in separate school systems, of which 4 (3.28 percent) had enrollments of less than 1,500 pupils, and 10 (8.20 percent) had more than 1,500 pupils in their school system. Four (3.28 percent) did not respond.

Of the education personnel used in the study, 25 (20.49 percent) taught in a school with less than 600 pupils; 38 (31.15 percent) taught in a school with 601-900 students; 41 (33.61 percent) taught in a school with more than 900 students; and 18 did not serve a particular school, or did not respond. Of the educational personnel 91 (74.59 percent) had farm backgrounds; 21 (17.21 percent) had rural nonfarm backgrounds; 9 had urban backgrounds; and only 1 did not respond to the question.

Characteristics of Farmers

Farmers were asked to answer questions pertaining to the (1) type of farm, (2) size of farm, (3) years of vocational agriculture taken in high school, and (4) background, as shown in Table 3.

Of those responding to the question, the greatest number, 85, (42.5 percent) were beef cattle farmers. Of the remaining farmers, 11 (5.50 percent) were dairy farmers; 79 (39.50 percent) were row-crop farmers; 3 (1.50 percent) were truck-crop farmers; 1 (.50 percent) was a catfish farmer; 5 (2.50 percent) were swine farmers; 3 (1.50 percent) were tree farmers; 2 (1.00 percent) were poultry farmers; and 11 (5.50 percent) did not respond. Farmers indicated that the size of their farms differed greatly. While 50 (25 percent) of the farms consisted of less than 100 acres, 56 (28 percent) farms were larger than 500 acres. Of the total farms, 38 (19 percent) consisted of 101-200 acres; 29 (14.5 percent), 201-300 acres; 14 (7 percent), 301-400 acres; and 10 (5 percent), 401-500 acres. Three (1.5 percent) did not respond.

Table 3.--Characteristics of Farmers.

Item	Frequency	Percent
1. Type of Farm:		
a. Beef cattle	85	42.50
b. Dairy cattle	11	5.50
c. Row crops	79	39.50
d. Truck crops	3	1.50
e. Catfish	1	.50
f. Swine	5	2.50
g. Tree	3	1.50
h. Poultry	2	1.00
i. No Answer	11	5.5
2. Size of Farm:		
a. Less then 100 acres	50	25.00
b. 101-200 acres	38	19.00
c. 201-300 acres	29	14.50
d. 301-400 acres	14	7.00
e. 401-500 acres	10	5.00
f. Above 501 acres	56	28.00
g. No Answer	3	1.50
3. Years of vo-ag while in high school:		
a. None	69	34.50
b. 1 year	20	10.00
c. 2 years	34	17.00
d. 3 years or more	71	35.50
e. No Answer	6	3.00
4. Background:		
a. Farm	177	88.50
b. Rural non-farm	10	5.00
c. Urban-town	11	5.50
d. No Answer	2	1.00

When asked about training in vocational agriculture, 71(35 percent) indicated they had had three or more years. Conversely, 69 (34.5 percent) had not had vocational agriculture in high school. Of those remaining, 20 (10 percent) had had one year of vocational agriculture; 34 (17 percent) had had two years of vocational agriculture. Thus, (62.5 percent) had taken one or more years of vocational agriculture in high school. Six (3 percent) did not respond to the question. Of those farmers included in the study, 177 (88.5 percent) had farm backgrounds, 10 (5 percent) had

rural non-farm backgrounds, 11 (5.5 percent) had urban backgrounds, and 2 (1 percent) did not reply.

Characteristics of Secondary School Students

Only three questions concerning students' characteristics were asked, as shown in Table 4. These were: (1) number of years of vocational agriculture; (2) background; (3) agricultural experience. Student response was capricious. Of those responding 32 (4.49 percent) had had one year of vocational agriculture; 228 (32.02 percent) had had two years of vocational agriculture; 174 (24.44 percent) had taken three or more years of vocational agriculture; while 278 students did not respond to the question. The greatest number (401 or 64.75 percent) came from the farm. Of the remaining students, 147 (20.65 percent) were rural non-farm; and 78 (10.96 percent) were from an urban area. Twenty-six (3.64 percent) did not respond to the question.

Table 4.--Characteristics of Secondary School Students.

Item	Frequency	Percent
1. Number of years of vocational agriculture		
a. 1 year	32	4.49
b. 2 years	228	32.02
c. 3 years or more	174	24.44
d. No Answer	278	39.05
2. Background:		
a. Farm	461	64.75
b. Rural non-farm	147	20.65
c. Urban-town	78	10.96
d. No Answer	26	3.64
3. Agricultural experience:		
a. Full-time farm	165	23.17
b. Part-time farm	353	49.58
c. Agribusiness	36	5.06
d. No Answer	158	22.19

It was interesting to note that of the students questioned, 165 (23.17 percent) had gained agricultural experience via a full-time farm; 353 (49.58 percent), almost half, had gained agricultural experience via a part-time farm; and only 36

(5.06 percent) had gained agricultural experience via agribusiness. A total of 158 (22.19 percent) did not respond.

Curricular Appraisal

The division of curricular appraisal is sub-headed or divided into the following sections: (1) vocational aspect of the curricula, (2) environmental aspect of the curricula and (3) composite ratings of vocational and environmental aspects of the curricula. In evaluating the knowledge and skill areas of the instrument, the same rating scale was used for both the vocational and environmental aspects of the curricula. Respondents were asked to rate each item on a three-point scale (a rating of one- no use; two - useful; and three- essential). To enhance relativity of each module and each item within the module to the total curricula, the rating scale was subdivided. In presenting the findings the following scale was used: 1- 1.5 ... insignificant; 1.51 - 2.0 ... slightly significant; 2.1 - 2.50 ... significant; and 2.51 - 3.0 ... highly significant.

Vocational Aspect of the Curricula

This section will present the ratings of each group for the knowledge and skill areas of the data gathering instrument. This section relates to the vocational aspect of the curricula for Agribusiness, Natural Resources and Environmental Control Education. Within this section the following headings are utilized: (1) agricultural business management, (2) plant science, (3) agricultural mechanics, (4) animal science, (5) soil science, (6) leadership development, and (7) recapitulation of group responses.

Agricultural Business Management

In ranking the modules within the curricula, the overall ratings of the agricultural business management module were highest. As shown in Table 5, items receiving highly significant ratings (2.51 - 3.0) were (1) basic principles of economics by school personnel; (2) budgeting by school personnel and farmers; (3) marketing (buying and selling) by school personnel and farmers; and (4) accounting and money management by school personnel and farmers. Agribusiness personnel's and students' ratings for the preceding items were significant (2.1 - 2.50). The remaining item for this module, business law and policy, received ratings of 2.1 or greater (significant) by all groups.

Table 5.--Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Agricultural Business Management in Agricultural Occupations.

ITEMS	AGRIBUSINESS PERSONNEL MEAN	RANK	EDUCATIONAL PERSONNEL MEAN	RANK	STUDENTS MEAN	RANK	FARMERS MEAN	RANK
Basic principles of economics	2.412	3	2.516	4	2.198	5	2.330	4
Budgeting	2.378	4	2.598	2	2.272	3	2.515	3
Marketing (buying and selling)	2.504	1	2.615	1	2.343	2	2.585	1
Business law and policy	2.149	5	2.230	5	2.225	4	2.165	5
Accounting and money management	2.439	2	2.533	3	2.434	1	2.520	2

Rating Scale: Highly Significant - Significant - Slightly Significant
3 - 2.51 2.50 - 2.1 2.0 - 1.51
Insignificant
1.50 - 1.0

Plant Science

The overall ratings of the plant science module had a wide distribution, as shown by Table 6. Farmers' ratings tended to be higher than other groups of respondents, with highly significant ratings for four of the six items within the module. Ratings of school personnel and students were significant for all items within the module. Conversely, agribusiness personnel rated both identification and classification of plants, plant physiology, and reproduction slightly significant (1.51 - 2.0), while rating other items such as cultivation, harvesting, identification and control of insects, plant nutrition, and identification and causes of diseases significant (2.1 - 2.50).

Table 6.--Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Plant Science in Agricultural Occupations.

	AGRIBUSINESS PERSONNEL		EDUCATIONAL PERSONNEL		STUDENTS		FARMERS	
ITEMS	MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
Identification and classification	1.973	6	2.221	6	2.204	6	2.345	6
Plant nutrition	2.183	3	2.361	3	2.244	4	2.555	3
Cultivation	2.260	1	2.426	2	2.263	3	2.630	1
Harvesting	2.229	2	2.361	3	2.278	2	2.585	2
Identification and causes of diseases	2.061	5	2.377	5	2.296	1	2.430	5
Identification and controls of insects	2.160	4	2.475	1	2.228	5	2.525	4
Plant physiology and reproduction	1.874	7	2.090	7	2.072	7	2.140	7

Rating Scale: Highly Significant - Significant - Slightly Significant
3 - 2.51 2.50 - 2.1 2.0 - 1.51
Insignificant
1.50 - 1.0

Agricultural Mechanics

In assessing the agricultural mechanics module, fourteen items were used, as shown in Table 7. These items included: (1) oxy-acetylene welding; (2) arc welding; (3) concrete and masonry; (4) power mechanics; (5) painting, preserving, and finishing; (6) making and interpreting drawings; (7) wood and synthetics; (8) tool fitting; (9) plumbing; (10) surveying;

Table 7.--Ratings of Agricultural Personnel, Educational Personnel, Secondary School Students and Farmers Concerning the Importance of Agricultural Mechanics in Agricultural Occupations.

	AGRIBUSINESS PERSONNEL		EDUCATIONAL PERSONNEL		STUDENTS		FARMERS	
ITEMS	MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
Oxy-acetylene welding	2.008	7	2.443	5	2.169	11	2.340	5
Arc welding	2.027	6	2.484	3	2.296	2	2.395	3
Concrete and masonry	1.859	13	2.402	8	2.213	8	2.185	11
Power mechanics	2.256	2	2.549	1	2.364	1	2.540	2
Painting, preserving, and finishing	2.031	5	2.475	4	2.246	6	2.315	7
Making and interpreting drawings	1.897	11	2.352	10	2.192	9	2.185	11
Wood and synthetics	1.870	12	2.344	11	1.944	14	2.160	13
Tool fitting	2.111	4	2.418	6	2.222	7	2.330	6
Plumbing	1.905	10	2.377	9	2.181	10	2.200	10
Surveying	1.779	14	2.279	12	2.150	12	2.215	9
Operating farm machinery	2.324	1	2.525	2	2.277	4	2.720	1
Soldering	1.969	9	2.270	13	2.114	13	2.145	14
Electricity	2.172	3	2.418	6	2.282	3	2.360	4
Metals	1.973	8	2.254	14	2.247	5	2.255	8

Rating Scale: Highly Significant - Significant - Slightly Significant
3 - 2.51 2.50 - 2.1 2.0 - 1.51
Insignificant
1.50 - 1.0

(11) operating farm machinery; (12) soldering; (13) electricity; and (14) metals. A summarization of ratings show that the ratings of agribusiness personnel were lowest of the four groups of respondents. Items receiving significant ratings from agribusiness personnel were power mechanics, tool fitting, operating farm machinery, and electricity. The remaining nine items of the module were rated "lowly significant" by this group. The remaining three groups' ratings were generally close with the exception of the students' rating of slightly significant for the item pertaining to wood and synthetics. All other items within the module received ratings of 2.1 - 2.50 (significant). Generally, educators' and farmers' ratings were higher than were the ratings of either students or agribusiness personnel. Items within the module receiving highly significant ratings were (1) power mechanics by educators and farmers; and (2) operating farm machinery by educators and farmers. All other items received ratings of significant by educators and farmers. Items receiving the lowest overall ratings were wood and synthetics and surveying.

Animal Science

Table 8 illustrates a distribution of ratings for persons both involved and uninvolved with the module being appraised.

Table 8.--Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Animal Science in Agricultural Occupations.

	AGRIBUSINESS PERSONNEL		EDUCATIONAL PERSONNEL		STUDENTS		FARMERS	
ITEMS	MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
Anatomy and physiology	1.710	4	2.164	5	1.976	5	2.090	5
Genetics (Heredity)	1.706	5	2.270	4	2.053	4	2.145	4
Nutrition	2.061	2	2.508	2	2.275	2	2.395	3
Management	2.355	1	2.730	1	2.371	1	2.650	1
Diseases and parasites	2.046	3	2.467	3	2.103	3	2.450	2

Rating Scale: Highly Significant 3 - 2.51 | Significant 2.50 - 2.1 | Slightly Significant 2.0 - 1.51 | Insignificant 1.50 - 1.0

Items within this module received ratings ranging from slightly significant to highly significant. Slightly significant ratings were assessed to the item pertaining to anatomy and physiology of animals by agribusiness personnel, students, and farmers. Genetics received a lowly significant rating from agribusiness personnel and students, and items pertaining to nutrition and diseases and parasites received the same rating from agribusiness personnel. These items received significant ratings from educational personnel and farmers. The management aspect of animal science was rated highly significant by both educational personnel and farmers, while receiving significant ratings from the other groups.

Soil Science

As shown in Table 9, farmers generally rated a knowledge of soil science higher than did other groups. Agribusiness

Table 9.--Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Soil Science in Agricultural Occupations.

	AGRIBUSINESS PERSONNEL		EDUCATIONAL PERSONNEL		STUDENTS		FARMERS	
ITEMS	MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
Soil classification and land use	2.050	3	2.320	3	2.289	1	2.495	2
Soil productivity	2.122	1	2.402	1	2.178	2	2.520	1
Soil components	1.985	5	2.189	5	2.070	5	2.235	5
Cropping practices	2.118	2	2.287	4	2.091	4	2.465	3
Drainage	2.046	4	2.361	2	2.147	3	2.385	4
Irrigation	1.691	6	2.049	6	2.037	6	2.015	6

Rating Scale: Highly Significant - 3 - 2.51; Significant - 2.50 - 2.1; Slightly Significant - 2.0 - 1.51; Insignificant - 1.50 - 1.0

personnel's rating of soil productivity and cropping practices were significant, while ratings for the remaining items were slightly significant. Only one item - soil productivity - received a highly significant rating; this rating was by farmers. The item receiving the lowest rating, slightly significant, by all groups was irrigation. Generally, other items were rated significant by educational personnel and farmers.

Leadership Development

Only three items were assessed in the leadership development module, as shown by Table 10. No rating was above significant. The highest ratings were by educational personnel and students. All three items, committee work, parliamentary procedure, and public speaking, were rated lowly significant by both agribusiness personnel, and farmers. Students' ratings for parliamentary procedure, and public speaking also were lowly significant.

Table 10.--Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Leadership Development in Agricultural Occupations.

	AGRIBUSINESS PERSONNEL		EDUCATIONAL PERSONNEL		STUDENTS		FARMERS	
ITEMS	MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
Committee work	2.027	1	2.344	1	2.140	1	2.050	1
Parliamentary procedure	1.832	3	2.254	3	1.972	3	1.835	3
Public speaking	1.973	2	2.320	2	2.084	2	1.935	2

Rating Scale: Highly Significant - Significant - Slightly Significant
3 - 2.15 2.50 - 2.1 2.0 - 1.51
Insignificant
1.50 - 1.0

Recapitulation of Group Responses Toward the Vocational Aspect of the Curriculum

Under this heading of the vocational aspect of the curricula, the overall response to each item within each module is shown in Table 11. Within this recapitulation is shown the

Table 11.--Recapitulation of Group Responses Toward the Vocational Aspect of the Curriculum.

ITEMS	AGRIBUSINESS PERSONNEL				EDUCATIONAL PERSONNEL				SECONDARY STUDENTS				FARMERS			
	NR	3	2	1	NR	3	2	1	NR	3	2	1	NR	3	2	1
ANIMAL SCIENCE																
Anatomy and physiology	24	56	96	86	7	47	54	14	59	221	314	118	20	73	93	14
Genetics (Heredity)	28	59	92	83	2	48	61	11	29	232	316	135	14	73	99	14
Nutrition	22	114	69	57	3	75	38	6	24	345	241	102	14	115	66	5
Management	13	152	61	36	1	94	25	2	31	398	210	73	7	150	40	3
Diseases and parasites	17	106	76	63	3	68	46	5	37	302	218	155	12	123	59	6
PLANT SCIENCE																
Identification and classification	24	95	87	56	8	51	54	9	50	336	236	90	13	101	82	4
Plant nutrition	16	127	70	49	4	61	48	9	30	342	232	108	11	137	50	2

Table 11.--Continued.

ITEMS	AGRIBUSINESS PERSONNEL				EDUCATIONAL PERSONNEL				SECONDARY STUDENTS				FARMERS			
	NR	3	2	1	NR	3	2	1	NR	3	2	1	NR	3	2	1
PLANT SCIENCE (cont'd)																
Cultivation	12	135	69	46	3	68	42	9	28	353	221	110	7	143	49	1
Harvesting	17	130	77	38	6	65	42	9	34	382	179	117	13	147	39	1
Identification and causes of diseases	22	106	86	48	5	62	48	7	34	367	223	88	14	118	67	1
Identification and controls of insects	20	124	74	44	6	72	41	3	46	345	230	91	14	138	46	2
Plant physiology and reproduction	27	79	96	60	10	41	60	11	42	265	277	128	16	70	105	9

Table 11.--Continued.

ITEMS	AGRIBUSINESS PERSONNEL				EDUCATIONAL PERSONNEL				SECONDARY STUDENTS				FARMERS			
	NR	3	2	1	NR	3	2	1	NR	3	2	1	NR	3	2	1
SOIL SCIENCE																
Soil classification and land use	19	95	102	46	7	63	42	10	41	361	237	73	9	119	72	
Soil productivity	17	109	91	45	5	64	47	6	32	294	285	101	12	132	53	3
Soil components	18	88	98	58	7	49	54	12	27	240	310	135	15	84	95	6
Cropping practices	19	111	88	44	5	57	47	13	33	265	280	134	11	121	65	3
Drainage	18	97	96	51	6	61	49	6	27	293	258	134	15	116	63	6
Irrigation	31	57	96	78	9	38	61	14	41	256	268	147	13	59	99	29
AGRICULTURAL BUSINESS MANAGEMENT																
Basic principles of economics	[illegible]		[illegible]	19	4	74	41	3	55	325	258	74	14	101	81	4

Table 11.--Continued.

ITEMS	AGRIBUSINESS PERSONNEL				EDUCATIONAL PERSONNEL				SECONDARY STUDENTS				FARMERS			
	NR	3	2	1	NR	3	2	1	NR	3	2	1	NR	3	2	1
AGRICULTURAL BUSINESS MANAGEMENT (cont'd)																
Budgeting	15	149	75	23	5	86	29	2	33	329	280	70	10	126	64	
Marketing (buying and selling)	16	181	45	20	4	88	25	5	29	382	221	80	8	138	52	2
Business law and policy	16	97	121	28	4	45	64	9	29	292	317	74	13	65	118	4
Accounting and money management	16	165	61	20	4	76	38	4	32	414	225	41	13	134	52	1
LEADERSHIP DEVELOPMENT																
Committee work	12	71	136	43	4	54	60	4	37	254	343	78	7	46	126	21

Table 11.--Continued.

ITEMS	AGRIBUSINESS PERSONNEL NR	3	2	1	EDUCATIONAL PERSONNEL NR	3	2	1	SECONDARY STUDENTS NR	3	2	1	FARMERS NR	3	2	1
LEADERSHIP DEVELOPMENT (cont'd)																
Parliamentary procedure	22	59	120	61	4	48	60	10	42	189	358	123	9	29	119	43
Public speaking	18	83	105	56	4	52	61	5	33	234	338	107	11	41	117	31
AGRICULTURAL MECHANICS																
Oxy-acetylene welding	15	86	104	57	4	68	44	6	60	302	289	61	6	89	96	9
Arc welding	13	90	100	59	3	71	41	7	29	321	311	51	4	92	99	5
Concrete and masonry	12	54	126	70	1	59	55	7	23	285	317	87	3	52	136	9
Power mechanics	10	119	99	34	2	73	44	3	22	345	304	41	2	113	83	2

Table 11.--Continued.

ITEMS	AGRIBUSINESS PERSONNEL				EDUCATIONAL PERSONNEL				SECONDARY STUDENTS				FARMERS			
	NR	3	2	1	NR	3	2	1	NR	3	2	1	NR	3	2	1
AGRICULTURAL MECHANICS (cont'd)																
Soldering	16	71	126	49	4	48	63	7	51	259	327	75	5	51	131	13
Electricity	7	88	135	32	2	58	59	3	32	322	302	56	6	88	102	4
Metals	13	73	119	57	2	47	61	12	31	302	316	63	5	67	122	6

Table 11.--Continued.

ITEMS	AGRIBUSINESS PERSONNEL				EDUCATIONAL PERSONNEL				SECONDARY STUDENTS				FARMERS			
	NR	3	2	1	NR	3	2	1	NR	3	2	1	NR	3	2	1
AGRICULTURAL MECHANICS (cont'd)																
Painting, preserving, and finishing	12	81	117	52	1	62	57	2	19	286	335	72	6	78	112	4
Making and interpreting drawings	13	63	120	66	4	51	66	1	26	275	326	85	3	61	118	18
Wood and synthetics	23	64	121	54	4	52	63	3	104	233	313	63	17	72	104	7
Tool fitting	19	105	97	41	5	67	45	5	56	316	294	46	8	85	103	4
Plumbing	14	61	126	61	2	54	62	4	42	284	316	70	8	60	128	4
Surveying	15	54	109	84	2	44	69	7	33	278	297	104	6	68	113	13
Operating farm machinery	7	134	83	38	4	79	32	7	38	343	261	70	6	157	36	1

frequency distribution of each item as responded to by each group used in the study. Also, shown in this table is the modal response for each item by each group. The scale used in Table 11 is as follows: NR --- No Response; 3 --- Essential; 2 --- Useful; and 1 --- No Use.

Environmental Aspect of the Curricula

This division reports the responses of the same individuals used in the vocational aspect of the curriculum to the environmental aspect of the curricula. This type of response could be compared to practical arts and/or environmental improvement or maintenance education. The same knowledge and skills areas were evaluated. Also, the same rating scale used in presenting the data for the vocational aspect of the curricula (3.0 - 2.51 ... Highly Significant; 2.50 - 2.10 ... Significant; 2.0 - 1.51 ... Slightly Significant; and 1.50 - 1.0 ... Insignificant) was used in summarizing and presenting the data for this division.

Agricultural Business Management

In the area of home or environmental maintenance deemed most necessary of those evaluated was agricultural business management. As shown in Table 12, such items as budgeting, marketing (buying and selling), and accounting and money management were rated significant by all groups.

Animal Science

Only two items within the animal science area were rated above 2.1 (Significant), as shown by Table 13. These items were: (1) nutrition, rated significant by educational personnel and students; (2) management, rated significant by educational personnel, students and farmers. Other items such as, anatomy and physiology, genetics and diseases and parasites were rated slightly significant by the three groups previously mentioned. Agribusiness personnels' ratings were slightly significant for all items pertaining to animal science.

Agricultural Mechanics

In assessing the fourteen items included in the agricultural mechanics area for environmental maintenance (Table 14), only three items received s gnificant ratings. Significant ratings (2.1 - 2.5) were given: (1) painting, preserving, and finishing by educational personnel, students,

Table 12.--Ratings of Agribusiness Personnel, Education Personnel, Secondary School Students, and Farmers Concerning the Importance of Agricultural Business Management in Maintaining a Wholesome Environment.

	AGRIBUSINESS PERSONNEL		EDUCATIONAL PERSONNEL		STUDENTS		FARMERS	
ITEMS	MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
Basic principles of economics	2.111	4	2.270	3	1.978	5	2.020	4
Budgeting	2.276	1	2.492	1	2.195	3	2.210	2
Marketing (buying and selling)	2.203	3	2.254	4	2.250	2	2.165	1
Business law and policy	1.900	5	2.025	5	2.073	4	1.945	5
Accounting and money management	2.249	2	2.369	2	2.251	1	2.210	2

Rating Scale: Highly Significant - Significant - Slightly Significant
3 - 2.51 2.50 - 2.1 2.0 - 1.51
Insignificant
1.50 - 1.0

Table 13.--Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Animal Science in Maintaining a Wholesome Environment.

	AGRIBUSINESS PERSONNEL		EDUCATIONAL PERSONNEL		STUDENTS		FARMERS	
ITEMS	MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
Anatomy and physiology	1.678	4	1.852	5	1.783	5	1.675	4
Genetics (Heredity)	1.613	5	1.902	4	1.878	4	1.655	5
Nutrition	1.939	2	2.287	1	2.231	2	2,030	2
Management	2.080	1	2.295	2	2.264	1	2.245	1
Diseases and parasites	1.851	3	2.090	3	2.050	3	1.995	3

Rating Scale: Highly Significant - Significant - Slightly Significant
3 - 2.51 2.50 - 2.1 2.0 - 1.51
Insignificant
1.50 - 1.0

Table 14.--Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students, and Farmers Concerning the Importance of Agricultural Mechanics in Maintaining a Wholesome Environment.

	AGRIBUSINESS PERSONNEL		EDUCATIONAL PERSONNEL		STUDENTS		FARMERS	
ITEMS	MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
Oxy-acetylene welding	1.697	12	1.762	14	1.856	13	1.820	13
Arc welding	1.682	13	1.787	13	1.955	10	1.880	10
Concrete and masonry	1.736	11	1.943	8	2.000	6	1.990	8
Power mechanics	1.931	5	2.057	4	2.063	3	2.095	3
Painting, preserving, and finishing	1.996	4	2.213	1	2.125	2	2.185	1
Making and interpreting drawings	1.770	10	1.959	7	1.990	7	1.945	9
Wood and synthetics	1.801	7	2.000	5	1.816	14	2.005	6
Tool fitting	1.862	6	1.934	10	1.968	9	1.995	7
Plumbing	2.004	3	2.115	3	2.059	4	2.065	4
Surveying	1.659	14	1.795	12	1.926	11	1.870	11
Operating farm machinery	2.008	2	2.000	6	2.041	5	2.030	5
Soldering	1.801	8	1.942	9	1.871	12	1.850	12
Electricity	2.065	1	2.197	2	2.132	1	2.135	2
Metals	1.778	9	1.836	11	1.973	8	1.815	14

Rating Scale: Highly Significant 3 - 2.51; Significant 2.50 - 2.1; Slightly Significant 2.0 - 1.51; Insignificant 1.50 - 1.0

and farmers; (2) plumbing by educational personnel; and (3) electricity by educational personnel, students, and farmers. Agribusiness personnel rated all items slightly significant, as did the remaining groups for items not previously mentioned. The item receiving the highest composite rating for this area was electricity.

Plant Science

As shown in Table 15, only two items received significant ratings and only one group gave this rating to each

Table 15.--Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students and Farmers Concerning the Importance of Plant Science in Maintaining a Wholesome Environment.

	AGRIBUSINESS PERSONNEL		EDUCATIONAL PERSONNEL		STUDENTS		FARMERS	
ITEMS	MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
Identification and classification	1.789	6	1.852	5	1.881	6	1.915	4
Plant nutrition	1.969	1	2.049	2	2.036	3	2.055	1
Cultivation	1.935	3	1.902	4	1.993	4	1.790	5
Harvesting	1.843	4	1.787	6	1.975	5	1.735	7
Identification and causes of diseases	1.843	5	2.025	3	2.119	1	2.010	2
Identification and controls of insects	1.939	2	2.180	1	2.062	2	1.960	3
Plant physiology and reproduction	1.617	7	1.738	7	1.815	7	1.775	6

Rating Scale: Highly Significant - 3 - 2.51; Significant - 2.50 - 2.1; Slightly Significant - 2.0 - 1.51; Insignificant - 1.50 - 1.0

item. Items receiving significant ratings (2.1 - 2.5) were: (1) identification and controls of insects by educational personnel; and (2) identification and causes of diseases by students.

These items were rated slightly significant by both agribusiness personnel and farmers. Other items such as identification and classification of plants, plant nutrition, cultivation, harvesting, and plant physiology and reproduction were rated slightly significant (1.5 - 2.0) by all groups.

Leadership Development

In assessing the environmental aspect of leadership development, agribusiness personnel, educational personnel, secondary students, and farmers rated all items slightly significant. As shown in Table 16, the item receiving the highest rating was committee work, with public speaking rating second. Of the four groups educational personnel's ratings were highest.

Table 16.--Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students and Farmers Concerning the Importance of Leadership Development in Maintaining a Wholesome Environment.

	AGRIBUSINESS PERSONNEL		EDUCATIONAL PERSONNEL		STUDENTS		FARMERS	
ITEM	MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
Committee work	1.816	1	2.000	1	1.948	1	1.835	1
Parliamentary procedure	1.632	3	1.918	2	1.781	3	1.715	3
Public speaking	1.697	2	1.902	3	1.820	2	1.765	2

Rating Scale: Highly Significant - Significant - Slightly Significant
3 - 2.51 2.50 - 2.1 2.0 - 1.51
Insignificant
1.50 - 1.0

Soil Science

The area receiving the lowest overall ratings for the environmental aspect of the curricula was soil science (Table 17). Of the four groups of respondents, educational personnel's and students' ratings were generally higher. All items evaluated within this area received ratings of slightly significant (2.0 - 1.51) from all four groups.

Table 17.--Ratings of Agribusiness Personnel, Educational Personnel, Secondary School Students and Farmers Concerning the Importance of Soil Science in Maintaining a Wholesome Environment.

	AGRIBUSINESS PERSONNEL		EDUCATIONAL PERSONNEL		STUDENTS		FARMERS	
ITEMS	MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
Soil classification and land use	1.770	4	1.910	3	1.948	1	1.835	3
Soil productivity	1.877	1	1.934	2	1.885	3	1.845	2
Soil components	1.713	5	1.779	5	1.818	5	1.715	4
Cropping practices	1.789	3	1.787	4	1.857	4	1.710	5
Drainage	1.854	2	1.992	1	1.927	2	1.905	1
Irrigation	1.517	6	1.689	6	1.769	6	1.515	6

Rating Scale: Highly Significant - Significant - Slightly Significant
3 - 2.51 2.50 - 2.1 2.0 - 1.51
Insignificant
1.50 - 1.0

Recapitulation of Group Responses Toward the Environmental Aspect of the Curriculum

Under this heading of the environmental aspect of the curricula the overall response to each item within each module is illustrated. Within this recapitulation is shown the frequency distribution of each item as responded to by each group used in the study. Also, shown in this table is the modal response for each item by each group. The scale used in Table 18 is as follows: NR ... No Response; 3 ... Essential; 2 ... Useful; and 1 ... No Use.

Table 18.--Recapitulation of Group Responses Toward the Environmental Aspect of the Curriculum.

ITEM	AGRIBUSINESS PERSONNEL				EDUCATIONAL PERSONNEL				SECONDARY STUDENTS				FARMERS			
	NR	3	2	1	NR	3	2	1	NR	3	2	1	NR	3	2	1
ANIMAL SCIENCE																
Anatomy and physiology	26	34	133	68	12	16	83	11	61	109	403	140	23	19	121	37
Genetics (Heredity)	28	32	122	79	8	16	85	13	47	150	375	141	18	19	112	51
Nutrition	23	80	106	52	5	50	62	5	32	297	316	68	19	56	115	10
Management	16	101	94	50	9	59	49	5	40	339	262	72	13	90	85	12
Diseases and parasites	25	64	117	55	9	34	74	5	47	266	264	136	20	60	101	19
PLANT SCIENCE																
Identification and classification	25	45	139	52	14	19	80	9	73	170	361	109	22	47	113	18
Plant nutrition	17	65	138	41	7	27	80	8	43	213	358	99	16	60	108	16

Table 18.--Continued.

ITEMS	AGRIBUSINESS PERSONNEL				EDUCATIONAL PERSONNEL				SECONDARY STUDENTS				FARMERS			
	NR	3	2	1	NR	3	2	1	NR	3	2	1	NR	3	2	1
PLANT SCIENCE (cont'd)																
Cultivation	17	73	113	58	10	21	78	13	40	208	332	133	18	40	98	44
Harvesting	20	68	102	71	13	19	71	19	45	226	288	154	22	41	89	48
Identification and causes of diseases	23	50	141	47	9	33	67	13	51	280	291	91	21	63	98	18
Identification and controls of insects	21	65	134	41	10	47	59	6	53	243	325	92	25	61	97	17
Plant physiology and reproduction	29	36	116	80	13	11	81	17	64	148	350	151	24	35	110	31
SOIL SCIENCE																
Soil classification and land use	25	44	136	56	11	24	73	14	57	195	344	117	21	32	126	21

Table 18.--Continued.

ITEMS	AGRIBUSINESS PERSONNEL NR	3	2	1	EDUCATIONAL PERSONNEL NR	3	2	1	SECONDARY STUDENTS NR	3	2	1	FARMERS NR	3	2	1
SOIL SCIENCE (cont'd)																
Soil productivity	18	59	127	57	10	23	77	12	45	157	364	147	22	40	112	26
Soil components	24	42	124	71	12	15	77	18	44	133	362	174	24	25	118	33
Cropping practices	19	52	119	71	10	22	61	29	43	168	319	183	20	32	100	46
Drainage	22	63	117	59	8	30	68	16	48	177	355	133	25	57	95	23
Irrigation	33	29	108	91	13	16	64	29	55	155	295	208	25	17	95	53
AGRICULTURAL BUSINESS MANAGEMENT																
Basic principles of economics	19	83	141	18	9	52	60	1	79	226	323	85	21	62	104	13
Budgeting	18	122	105	16	6	72	43	1	45	300	297	71	20	90	85	5

Table 18.--Continued.

ITEMS	AGRIBUSINESS PERSONNEL				EDUCATIONAL PERSONNEL				SECONDARY STUDENTS				FARMERS			
	NR	3	2	1	NR	3	2	1	NR	3	2	1	NR	3	2	1
AGRICULTURAL BUSINESS MANAGEMENT																
Marketing (buying and selling)	25	121	95	20	10	53	57	2	48	328	282	55	19	83	89	9
Business law and policy	25	56	146	34	6	22	86	8	44	225	360	84	21	46	120	13
Accounting and money management	21	121	103	16	6	56	60		57	347	255	54	24	98	73	5
LEADERSHIP DEVELOPMENT																
Committee work	17	33	162	49	7	22	85	8	49	172	382	110	17	24	137	22
Parliamentary procedure	27	28	135	71	4	10	94	14	52	122	367	172	19	16	131	34

Table 18.--Continued.

ITEMS	AGRIBUSINESS PERSONNEL				EDUCATIONAL PERSONNEL				SECONDARY STUDENTS				FARMERS			
	NR	3	2	1	NR	3	2	1	NR	3	2	1	NR	3	2	1
LEADERSHIP DEVELOPMENT (cont'd)																
Public speaking	25	32	142	62	8	17	83	14	51	139	359	164	18	22	128	32
AGRICULTURAL MECHANICS																
Oxy-acetylene welding	20	32	136	73	8	10	80	24	72	163	357	121	10	24	126	40
Arc welding	20	29	138	74	5	11	78	28	42	168	388	115	8	31	122	39
Concrete and masonry	20	26	158	57	4	14	91	13	28	162	417	106	9	34	139	18
Power mechanics	15	43	170	33	4	23	86	9	33	190	412	78	8	55	117	20
Painting, preserving, and finishing	15	55	163	28	2	32	85	3	27	212	406	68	11	64	120	5

Table 18.--Continued.

ITEMS	AGRIBUSINESS PERSONNEL				EDUCATIONAL PERSONNEL				SECONDARY STUDENTS				FARMERS			
	NR	3	2	1	NR	3	2	1	NR	3	2	1	NR	3	2	1
AGRICULTURAL MECHANICS (cont'd)																
Making and interpreting drawings	16	22	171	52	7	17	89	9	30	167	403	113	12	37	127	24
Wood and synthetics	26	30	174	31	7	19	89	7	107	155	381	70	21	51	119	9
Tool fitting	21	37	170	33	7	17	86	12	62	179	395	77	14	37	139	10
Plumbing	13	49	175	24	4	24	92	2	50	207	391	65	15	50	128	7
Surveying	14	19	147	81	4	9	81	28	36	164	369	144	13	39	109	39
Operating farm machinery	13	69	136	43	6	30	67	19	38	220	340	115	12	57	105	26
Soldering	17	24	177	43	6	15	89	12	56	149	381	127	12	20	141	27
Electricity	9	54	177	21	4	35	79	4	38	235	376	64	15	61	120	4
Metals	13	27	160	61	4	9	88	21	36	179	372	126	13	22	132	33

69

Composite Ratings of the Curriculum

This section of the report encompasses the opinions of all groups for each item. This section shows the arithmetic mean and rank for each item taking all responses into consideration. Each aspect of the curricula will be shown separately. The rating scale used for both aspects of the curricula is as follows: 3.0 - 2.51 --- Highly Significant; 2.5 - 2.1 --- Significant; 2.0 - 1.51 --- Slightly Significant; 1.50 - 1.0 --- Insignificant.

Vocational Aspect of the Curriculum

The composite ratings for the vocational aspect of the curricula are shown in Table 19. As can be seen in Table 19, four of the top ten items received highly significant ratings. The top ten items were from four different modules and none received a composite rating of less than a mean of 2.41 (significant). The top ten items, the arithmetic mean and the module for which they are a part are as follows:

1. Accounting and money management---a mean of 2.581---Agricultural Business Management
2. Management---a mean of 2.567---Animal Science
3. Marketing (buying and selling)---a mean of 2.561---Agricultural Business Management
4. Power mechanics---a mean of 2.510---Agricultural Mechanics
5. Operating farm machinery---a mean of 2.501---Agricultural Mechanics
6. Budgeting---a mean of 2.485---Agricultural Business Management
7. Cultivation---a mean of 2.457---Plant Science
8. Harvesting---a mean of 2.446---Plant Science
9. Basic principles of economics---a mean of 2.415---Agricultural Business Management
10. Plant nutrition---a mean of 2.414---Plant Science

Table 19.--Composite Ratings of the Vocational Aspect of the Curricula.

ITEM	COMPOSITE M	COMPOSITE R
ANIMAL SCIENCE		
Anatomy and physiology	2.081	39
Genetics (heredity)	2.141	36
Nutrition	2.395	16
Management	2.567	2
Diseases and parasites	2.302	25
PLANT SCIENCE		
Identification and classification	2.304	24
Plant nutrition	2.414	10
Cultivation	2.457	7
Harvesting	2.446	8
Identification and causes of diseases	2.400	13
Identification and controls of insects	2.406	12
Plant physiology and reproduction	2.167	35
SOIL SCIENCE		
Soil classification and land use	2.398	14
Soil productivity	2.364	17
Soil components	2.213	33
Cropping practices	2.296	26

Table 19.--Continued.

ITEM	COMPOSITE M	COMPOSITE R
SOIL SCIENCE (cont'd)		
Drainage	2.307	23
Irrigation	2.088	38
AGRICULTURAL BUSINESS MANAGEMENT		
Basic principles of economics	2.415	9
Budgeting	2.485	6
Marketing (buying and selling)	2.561	3
Business law and policy	2.324	20
Accounting and money management	2.581	1
LEADERSHIP DEVELOPMENT		
Committee work	2.246	30
Parliamentary procedure	2.072	40
Public speaking	2.184	34
AGRICULTURAL MECHANICS		
Oxy-acetylene welding	2.311	22
Arc welding	2.398	15
Concrete and masonry	2.278	27
Power mechanics	2.510	4
Painting, preserving and finishing	2.358	18

Table 19.--Continued.

ITEM	COMPOSITE M	COMPOSITE R
AGRICULTURAL MECHANICS (cont'd)		
Making and interpreting drawings	2.270	28
Wood and synthetics	2.121	37
Tool fitting	2.355	19
Plumbing	2.270	29
Surveying	2.220	32
Operating farm machinery	2.501	5
Soldering	2.227	31
Electricity	2.408	11
Metals	2.317	21

As illustrated by the preceding items, ratings tended to be significant or above. Only three items, parliamentary procedure, anatomy and physiology, and irrigation, received ratings of slightly significant.

Environmental Aspect of the Curriculum

Table 20 shows the composite ratings for the environmental aspect of the curricula. The items received ratings from significant to slightly significant. The highest rating (a mean of 2.406) was given the item accounting and money management, while the lowest rating (a mean of 1.822) was given the item irrigation. The top ten items, their arithmetic mean and the module they represent are as follows:

1. Accounting and money management---a mean of 2.406---Agricultural Business Management

2. Budgeting ---a mean of 2.393---Agricultural Business Management

3. Marketing (buying and selling)---a mean of 2.379---Agricultural Business Management

4. Management---a mean of 2.378---Animal Science

5. Nutrition---a mean of 2.298---Animal Science

6. Electricity---a mean of 2.276---Agricultural Mechanics

7. Painting, preserving, and finishing---a mean of 2.268---Agricultural Mechanics

8. Plumbing---a mean of 2.205---Agricultural Mechanics

9. Power mechanics---a mean of 2.192---Agricultural Mechanics

10. Basic principles of economics---a mean of 2.190---Agricultural Business Management

Table 20.--Composite Ratings of the Environmental Aspect of the Curricula.

ITEMS	COMPOSITE M	COMPOSITE R
ANIMAL SCIENCE		
Anatomy and physiology	1.903	39
Genetics (heredity)	1.943	35
Nutrition	2.298	5
Management	2.378	4
Diseases and parasites	2.156	16
PLANT SCIENCE		
Identification and classification	2.016	28
Plant nutrition	2.178	14
Cultivation	2.092	18
Harvesting	2.045	24

Table 20.--Continued.

ITEMS	COMPOSITE M	COMPOSITE R
PLANT SCIENCE (cont'd)		
Identification and causes of diseases	2.189	11
Identification and controls of insects	2.183	12
Plant physiology and reproduction	1.913	37
SOIL SCIENCE		
Soil classification and land use	2.042	25
Soil productivity	2.033	26
Soil components	1.928	36
Cropping practices	1.965	32
Drainage	2.066	21
Irrigation	1.822	40
AGRICULTURAL BUSINESS MANAGEMENT		
Basic principles of economics	2.190	10
Budgeting	2.393	2
Marketing (buying and selling)	2.379	3
Business law and policy	2.165	15
Accounting and money management	2.406	1

Table 20.--Continued.

ITEMS	COMPOSITE M	COMPOSITE R
LEADERSHIP DEVELOPMENT		
Committee work	2.060	22
Parliamentary procedure	1.905	38
Public speaking	1.946	34
AGRICULTURAL MECHANICS		
Oxy-acetylene welding	1.960	33
Arc welding	2.024	27
Concrete and masonry	2.091	19
Power mechanics	2.192	9
Painting, preserving, and finishing	2.268	7
Making and interpreting drawings	2.087	20
Wood and synthetics	2.009	30
Tool fitting	2.096	17
Plumbing	2.205	8
Surveying	2.002	31
Operating farm machinery	2.180	13
Soldering	2.011	29
Electricity	2.276	6
Metals	2.048	23

Appraisal of Staffing Patterns and Methodology of Teaching for Agricultural and Agribusiness Occupations

This section summarizes the opinions of teachers toward the implementation of Agribusiness, Natural Resources, and Environmental Control into the concept of career education. It must be remembered that both staffing patterns and methodology for teaching were aimed at implementing the program from grade level one through grade level fourteen.

Items or statements were written so as to get three types of responses, either positive, neutral, or negative. The rating scale used in the questionnaire was as follows: 5 -- strongly agree; 4 -- agree; 3 -- neutral; 2 -- disagree; 1 -- strongly disagree.

Staffing Patterns for Agricultural and Agribusiness Programs

In attempting to appraise a variety of staffing patterns for implementing the most workable and efficient program for agriculture, both secondary and post-secondary teachers of agriculture were used. The questionnaire was geared to the career education concept, thereby incorporating agricultural subject matter from grade one through the technical or post-secondary phases of education. Teachers were asked to rate nine items pertaining to staffing patterns (Part I, Appendix C). As shown in Table 21, both old and new staffing concepts were incorporated into the questionnaire.

Positive responses were grouped around three items. These items listed from highest to lowest were: (1) A curriculum council composed of specialists who develop curricular materials, tests, etc., and a master teacher who supervises the teacher instructors who are aided by non-credentialed instructional and technical assistants could effectively implement and carry out a total program of vocational education in a school system; (2) An agricultural program should have technology specialists teaching in each subject matter area taught; and (3) An agricultural teaching team with a team leader, and assistant team leader, teachers and paraprofessionals could coordinate the teaching of all agricultural subject matter, provide the supervision and carry out all other functions of a vocational complex. The items receiving the lowest ratings were: (1) A one teacher vo-ag department could coordinate teaching of all agricultural subject matter plus carrying out all supervisory and other community activities effectively (a mean of 1.19); and (2) One

teacher and a teacher aide who is in charge of non-instructional activities could teach all agricultural subject matter and carry out all other duties of the department effectively (a mean of 1.22).

Table 21.--Appraisal of Staffing Patterns for Agricultural and Agribusiness Programs by Teachers of Agriculture.

	ITEMS	MEAN	RANK
1.	A one teacher vo-ag department could coordinate teaching of all agricultural subject matter plus carrying out all supervisory and other community activities effectively.	1.19	9
2.	A two teacher vo-ag department could teach all agricultural subject matter, provide supervision, and carry out all other duties effectively by dividing their time equally.	2.16	7
3.	One teacher and a teacher aide who is in charge of non-instructional activities could teach all agricultural subject matter and carry out all other duties of the department effectively.	1.22	8
4.	An agricultural teaching team with a team leader, and assistant team leader, teachers and paraprofessionals could coordinate the teaching of all agricultural subject matter, provide the supervision and carry out all other functions of a vocational complex.	4.00	3
5.	A curriculum council, plus a curriculum associate to supervise the senior teachers who coordinate the instruction of associate teachers aided by paraprofessionals and teacher aides could effectively implement and carry out a total program of vocational education in a school system.	3.95	4
6.	A curriculum council composed of specialists who develop curricular materials, tests, etc. and a master teacher who supervises the teacher instructors who are aided by non-credentialed instructional and technical assistants could effectively implement and carry out a total program of vocational education in a school system.	4.30	1

Table 21.--Continued.

ITEMS	MEAN	RANK
7. A state-wide program specialist for each agricultural service area to coordinate all the instructional process for all agriculture programs could be effective.	3.52	5
8. A district agricultural curriculum materials specialist could coordinate the teaching of all agricultural subject matter.	3.04	6
9. An agricultural program should have Technology specialists teaching in each subject matter area taught.	4.04	2

Rating Scale: Strongly Agree 4.21 - 5.0 - Agree 3.41 - 4.2 - Neutral 2.61 - 3.40; Disagree 1.81 - 2.60 - Strongly Disagree 1.0 - 1.8

Methods in Teaching Agricultural and Agribusiness Knowledge and Skill Areas

As shown in Table 22, teachers were asked to respond to nine items pertaining to different methods in teaching agricultural subject matter. Again implications were aimed toward the career education concept, inclusive of grades one through fourteen. With this concept in mind the teachers ratings were high, with only one item having a mean of less than 3.0. Teachers reactions were that most innovative types of teaching methodology could help in achieving objectives in the educational process, but at different degrees. The item receiving the highest rating (a mean of 4.78) was that arranging the curriculum in small detailed units (modules) for each level of education could make the teaching process more effective.

Table 22.--Appraisal of Methods for Teaching Agricultural Subject Matter by Teachers of Agriculture.

ITEMS	MEAN	RANK
1. The lecture method is an effective method of teaching elementary, junior high, secondary, and post-secondary students.	1.47	9

Table 22.--Continued.

ITEMS	MEAN	RANK
2. Programmed instruction could be effectively implemented in specialized training areas of agriculture.	3.60	8
3. Programmed instruction could be implemented in exploring agricultural occupations for the junior high level.	4.21	4
4. Programmed instruction could be effectively implemented in making elementary children aware of agriculture.	4.13	5
5. The project method of instruction could be an effective method of teaching elementary grades about agriculture.	3.91	7
6. Land laboratories could effectively enhance learning experiences of secondary students.	4.43	2
7. Land laboratories could effectively enhance learning experiences of junior high students.	4.43	2
8. Land laboratories could effectively enhance learning experiences of elementary students.	4.04	6
9. Arranging the curriculum in small detailed units for each level of education could make the teaching process more effective.	4.78	1

Rating Scale:	Strongly Agree - 4.21 - 5.0	Agree - 3.41 - 4.2	Neutral 2.61 - 3.40
	Disagree - 1.81 - 2.60	Strongly Disagree 1.0 - 1.8	

Opinions of the Jury of Experts Toward the Proposed Core Curriculum for Agricultural and Agribusiness Occupations on All Levels of Education

Once the useable data from the basic instrument (Appendix C) was compiled and evaluated, subject matter areas were developed for each level of education. Once materials were outlined and reviewed by persons from the respective subject matter areas, the materials were grouped into questionnaire form (Appendix E). The materials in this questionnaire were organized, using the career education model submitted by the Office of Health, Education, and Welfare as a guide. From this guide materials fro the Agribusiness, Natural Resources and Environmental Control Occupations service area were arranged in four levels. These were: Level I ... Career Awareness for grades K-6; Level II ... Career Exploration for grades 7-8; Level III ... Career Preparation for grades 9-12; and Level IV ... Post-Secondary or Technical Level for grades 13-14.

Upon completion, the questionnaire was printed for utilization within the State. Selected vocational directors, superintendents, principals, teachers, and curriculum supervisors across the State responded to the questionnaire. A total of 10 administrators (superintendents, principals, and vocational directors), 4 vocational agriculture teachers, and 13 curriculum supervisors and/or coordinators responded to the instrument.

The rating scale used in the questionnaire was as follows; 5 .. strongly agree; 4 .. agree; 3 .. neutral; 2 .. disagree; 1 .. strongly disagree. In the following summarization of the agricultural subject matter areas for each level of education previously mentioned, the arithmetic mean was used to show the agreement, neutrality, or disagreement of the respondents to each item. This division of the report was presented under four headings. These are: (1) Elementary or Career Awareness Period; (2) Junior High or Exploration Period; (3) Secondary or Preparation Period; and (4) Post-Secondary or Technical Period. This division shows the proposed curriculum for each level and the opinions of knowledgeable persons as to its inclusion into the total of career education. It must be remembered that nowhere in the questionnaire was a statement of who should teach the material or supervise the learning experiences made. This questionnaire was designed to answer the following questions: (1) should the outlined material along with supervised experiences be taught as a <u>part</u> of career education to all pupils in Level I (grades 1-6)?; (2) should the outlined material be <u>available</u> for all pupils who show an interest in agricultural or agri-related occupations

in Level II (grades 7-8)?; and (3) should the outlined material, including work experience and/or practical application of theory be taught to all persons who have chosen agricultural or agri-related occupations as their life's vocation in Levels III and IV (grades 9-12 and post-secondary).

Level I - Career awareness (Grades K-6)

Under the elementary heading there were six areas included, as there was in the basic questionnaire. As is shown in Table 23, only three (3) items in the proposed elementary agricultural segment of the curriculum received ratings less than a mean of 4.21. The items and modules were: (1) tools of primitive man, elementary agricultural mechanics; (2) what man has discovered about soil, elementary soil science; and (3) how animals are developed, elementary animal science. The responses were that these items should be included, but to a lesser degree than other items. Modules receiving ratings of 4.21 - 5 were: (1) elementary economics and business; (2) elementary plant science, and (3) elementary leadership development. Thus, the respondents strongly agreed that the proposed material should be used as a guide for developing both subject matter content and practical experiences to make younger children or pupils aware of their total environment, including agriculture.

Table23.--Ratings of Administrators, Curriculum Specialists, and Vocational Agriculture Teachers Concerning Level I of the Proposed Core Curriculum for Agricultural and Agribusiness Occupations.

ITEMS	MEAN	RANK
Elementary Economics and Business		
The kind of economic system we live under	4.41	4
The meaning of a free market	4.30	5
The meaning of money	4.59	2
What money is used for	4.63	1
How money is made	4.22	6
Man, money and work	4.56	3
Elementary Plant Science		
Plants and the natural environment	4.48	3
Plants as a source of food	4.63	2
Plants as a thing of beauty	4.38	7

Table 23.--Continued.

ITEMS	MEAN	RANK
Plants as an economic factor (wood, lumber, etc.)	4.44	4
How plant life begins	4.44	4
How plants grow	4.44	4
Plants, man, and work	4.67	1
Elementary Leadership Development		
Meaning of leadership	4.41	4
Why we have to have leaders in our society	4.30	5
Kinds of leadership	4.59	2
Identity of a few national, state, and local leaders	4.63	1
How to recognize and follow good leadership	4.22	6
Man, work, and leadership	4.56	3
Elementary Agricultural Mechanics		
Learning about tools - kinds, use, etc.	4.44	2
How tools came into being	4.30	3
Tools of primitive man	3.93	4
Man, tools, and work	4.56	1
Elementary Soil Science		
The planet earth - what is it - how it came to be	4.30	5
How soil is formed	4.35	4
Our changing earth - causes of change	4.30	5
The earth and its relation to life	4.48	1
How soil supports animal and plant life	4.44	3
What man has discovered about soil	4.15	7
Man, soil, and work	4.48	1

Table 23.--Continued.

ITEMS	MEAN	RANK
Elementary Animal Science		
Animals and their relationship to man	4.59	1
How animals are developed	4.11	6
How animals get their food	4.37	4
Differences in animals	4.26	5
Uses of animals	4.41	3
Animals, man, and work	4.59	2

Rating Scale:	Strongly Agree	-	Agree	-	Neutral
	4.21 - 5.0		3.41 - 4.2		2.61 - 2.40
	Disagree	-	Strongly Disagree		
	1.81 - 2.60		1.0 - 1.8		

Level II - Career Exploration (Grades 7-8)

As illustrated in Table 24, this period deals entirely with the exploration of occupational opportunities in the students' interest areas. Again, there are six occupational areas within the realm of agriculture. Again ratings tended to be exceptionally high from all groups. Only one item, range in pay from the plant science module, received a rating of less than 4.2. All items within the remaining 5 modules received ratings of strongly agree.

Table 24.--Ratings of Administrators, Curriculum Specialists, and Vocational Agriculture Teachers Concerning Level II of the Proposed Core Curriculum for Agricultural and Agribusiness Occupations.

ITEMS	MEAN	RANK
Careers in Agricultural Business		
Kinds of occupations	4.59	1

Table 24.--Continued.

ITEMS	MEAN	RANK
Careers in Agricultural Business (Cont.)		
Levels of employment	4.52	3
Nature of work	4.52	3
Preparation needed for job entry	4.48	5
Range in pay	4.26	6
Hands on and mind on experience	4.59	2
Careers in Plant Science		
Kinds of occupations	4.63	1
Levels of employment	4.44	5
Nature of work	4.52	2
Preparation needed for job entry	4.48	3
Range in pay	4.19	6
Hands on and mind on experiences	4.48	4
Careers in Agricultural Leadership		
Kinds of occupations	4.56	2
Levels of employment	4.52	4
Nature of work	4.59	1
Preparation needed for job entry	4.44	5
Range in pay	4.26	6
Hands on and mind on experiences	4.56	2

Table 24.--Continued.

ITEMS	MEAN	RANK
Careers in Agricultural Mechanics		
Kinds of occupations	4.56	2
Levels of employment	4.48	4
Nature of work	4.52	3
Preparation needed for job entry	4.44	5
Range in pay	4.26	6
Hands on and mind on experiences	4.59	1
Careers in Soil Science		
Kinds of occupations	4.48	2
Levels of employment	4.44	3
Nature of work	4.44	3
Preparation needed for job entry	4.33	5
Range in pay	4.22	6
Hands on and mind on experiences	4.52	1
Careers in Animal Science		
Kinds of occupations	4.59	1
Levels of employment	4.52	3
Nature of work	4.52	3
Preparation needed for job entry	4.44	5
Range in pay	4.33	6
Hands on and mind on experiences	4.59	1

Rating Scale:	Strongly Agree	-	Agree	-	Neutral
	4.21 - 5.0		3.41 - 4.2		2.61 - 2.40
	Disagree	-	Strongly Disagree		
	1.81 - 2.60		1.0 - 1.8		

Level III - Preparatory Period (Grades 9-12)

A summary of rating for the secondary or preparatory period for the agricultural and agribusiness occupations service area is shown in Table 25. Respondents strongly agreed that all the knowledge and skill areas designated in the proposed curriculum should be taught to all persons who are planning careers in agricultural or agribusiness occupations. It must be remembered that some areas received higher ratings, thus greater emphasis could be put on these areas.

Table 25.--Ratings of Administrators, Curriculum Specialists, and Vocational Agriculture Teachers Concerning Level III of the Proposed Core Curriculum for Agricultural and Agribusiness Occupations.

ITEMS	MEAN	RANK
Basic Principles of Agricultural Business Management		
The nature and importance of economic principles in agriculture	4.56	5
Understanding economic factors that affect agriculture	4.59	4
Factors affecting profits in agriculture	4.67	2
Marketing - buying and selling	4.70	1
Record keeping (accounting)	4.63	3
Business law	4.22	7
Agricultural policy	4.30	6
Basic Principles of Plant Science		
Classification of agricultural plants	4.52	4
Identification of parts of plants, and functions of each part	4.48	5
Understanding the reproduction systems and reproduction processes	4.56	3

Table 25.--Continued.

ITEMS	MEAN	RANK
Basic Principles of Plant Science (Cont.)		
Plant growth - how it takes place	4.59	2
Understanding plant nutrition	4.63	1
Insects that attack plants and their classification	4.48	5
Identification and classification of weeds	4.37	9
Weed control measures	4.48	5
Basic Principles of Leadership Development		
The importance of integrity	4.67	1
Principles of public speaking	4.33	3
Fundamentals of parliamentary procedure	4.33	3
Importance of committee actions	4.33	3
How to conduct a public meeting	4.52	2
Basic Principles of Agricultural Mechanics		
How to care for tools	4.74	1
How to fit tools and use them properly	4.62	2
Oxy-acetylene welding	4.52	4
Arc welding	4.60	3
Concrete and concrete masonry	4.30	10
Power mechanics	4.50	6
Painting, preserving, and finishing	4.48	7
Making and interpreting drawings	4.41	9

Table 25.--Continued.

ITEMS	MEAN	RANK
Basic Principles of Agricultural Mechanics (Cont.)		
Wood and synthetics	4.26	12
Plumbing	4.30	10
Surveying	4.26	12
Operating farm machinery	4.52	5
Soldering	4.26	12
Electricity	4.44	8
Metals	4.26	12
Basic Principles of Soil Science		
The nature and importance of soil	4.63	1
How soils are classified	4.33	10
Forces and processes of soil development	4.41	8
Soil components - functions of each	4.33	10
Meaning of soil productivity	4.59	3
Meaning of soil pH	4.46	7
Plant nutrients in the soil	4.56	4
Commerical sources of plant nutrients	4.41	8
Soil and the environment	4.48	5
Definition and causes of erosion	4.63	1
Soil drainage - how to distinguish between poor and good drainage	4.48	5

Table 25.--Continued.

ITEMS	MEAN	RANK
Basic Principles of Animal Science		
Anatomy and physiology of farm animals	4.63	2
Nutrition of farm animals	4.67	1
Diseases of farm animals	4.48	5
Common parasites of farm animals	4.52	4
Environment factors that affect physiology of animals	4.56	3

Rating Scale:	Strongly Agree	-	Agree	-	Neutral
	4.21 - 5.0		3.41 - 4.2		2.61 - 2.40
	Disagree	-	Strongly Disagree		
	1.81 - 2.60		1.0 - 1.8		

Level IV - Post-Secondary Period (Grades 13-14)

Reactions of the respondents were very positive toward the inclusion of the outlined material in the technical training of students for agricultural or agri-related occupations. It must be remembered that these people were professionals within education field and not business people or farmers. Also, it should be remembered that no where in the questionnaire was the statement of who should teach the material, only that it should be a part of the curriculum for persons planning careers in agricultural or agri-related occupations. Respondents strongly agreed that all items listed under the post-secondary or technical level should be taught. It was pointed out, in almost every case by respondents, that technical subject matter pertaining to agricultural mechanics should not be taught as a conglomeration. It was pointed out by the respondents that a specialized course could be made up of a single item or two or more related items. Therefore, persons could choose an area and be trained specifically for that area. Table 26 shows the overall ratings for each item included in the post-secondary level.

Table 26.--Ratings of Administrators, Curriculum Specialists, and Vocational Agriculture Teachers Concerning Level IV of the Proposed Core Curriculum for Agricultural and Agribusiness Occupations.

ITEMS	MEAN	RANK
Technical Agricultural Business Management		
Introduction	4.56	3
Basic economic principles and definitions	4.58	2
Agricultural statistics	4.44	9
The making of prices	4.48	8
Applied marketing	4.52	7
Principles of production	4.56	3
Returns (profits)	4.56	3
Resource acquisition and use	4.56	3
Applied firm management	4.59	1
Technical Plant Science		
Introduction (plants and our environment)	4.52	7
Plant physiology, growth & reproductive processes	4.59	3
Plant nutrition	4.59	3
Common plant diseases and their control	4.63	2
Common plant insects and their control	4.59	3
Common weeds of row crops, pastures and available chemicals for their control	4.59	3
Laboratory experiences involving practical experiences to implement the theoretical base applied in group and individual instruction	4.67	1

Table 26.--Continued.

ITEMS	MEAN	RANK
Technical Leadership Development		
Organization and operation of our Constitutional government	4.59	3
Basic principles of the operation of state government	4.59	3
Understanding the organization and functions and procedures of county government	4.56	5
Importance of honesty and integrity in leadership positions	4.89	1
Importance of patriotism to civic responsibility	4.81	2
Technical Agricultural Mechanics		
Technical oxy-acetylene welding	4.60	3
Technical arc welding	4.60	3
Technical concrete and masonry	4.52	10
Technical power mechanics	4.64	2
Technical painting, preserving, and finishing	4.52	10
Technical making and interpreting drawings	4.56	7
Technical wood and synthetics	4.56	7
Technical tool fitting	4.52	10
Technical plumbing	4.56	7
Technical surveying	4.60	3
Technical operating farm machinery	4.68	1
Technical soldering	4.48	14
Technical electricity	4.60	3
Technical metals	4.52	10

Table 26.--Continued.

ITEMS	MEAN	RANK
Technical Soil Science		
Introduction to soils	4.56	2
Uses of soils by man	4.56	2
Recreational aspect of soils	4.37	7
Emphasis of field laboratories (practical experience)	4.54	4
1. Identifying and classification of area soils	4.54	4
2. Judging of soils	4.50	6
3. Developing plans for land use and practices	4.68	1
Technical Animal Science		
Introduction	4.62	6
Genetics and heredity	4.67	2
Anatomy and physiology	4.62	6
Nutrition and feed utilization	4.70	1
Growth and development	4.62	7
Animal products and by-products	4.63	5
Animal health and sanitation	4.67	2
Animal behavior	4.52	9
Laboratory experiences should correlate with the subject matter	4.67	3

Rating Scale:	Strongly Agree	-	Agree	-	Neutral
	4.21 - 5.0		3.41 - 4.2		2.61 - 2.40
	Disagree	-	Strongly Disagree		
	1.81 - 2.60		1.0 - 1.8		

III. CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

In the final analysis of the report certain factors thought to be most significant should be brought forth. Thus, the following conclusions were drawn:

1. All groups viewed the knowledge and skill areas presented as being useful in their vocation, but at different degrees.

2. All groups viewed the knowledge and skill areas presented as being useful in maintaining their home and environment, but at different degrees.

3. This implies that the respondents considered any subject matter and/or experiences which would result in "... the student being equipped to live his life as a fulfilled human being as being useful."

4. Agribusiness personnel are predominantly trained on-the-job.

5. Students' experiences were minimal in agribusiness. This may account for the on-the-job training response by the agribusiness personnel.

6. Knowledge and skill areas relating to agribusiness are very specialized and only a talking or basic knowledge is required in related areas.

7. Agribusiness personnel's ratings tended to be somewhat lower than did other groups included in the study, while educational personnel's and farmers' ratings tended to be somewhat higher than other groups for all modules.

8. The agricultural business management module seemed to be the most useful for all groups.

9. Plant science, animal science, and soil science were most useful to farmers.

10. In the agricultural mechanics module, power mechanics and operating farm machinery were considered most important by agribusiness personnel, educational personnel, and farmers.

11. To properly implement the Agribusiness, Natural Resources, and Environmental Control Occupations service area in career education, staffing patterns other than those most common today in Mississippi must be utilized.

12. It was concluded that all teachers surveyed were interested in the methodology and techniques of teaching.

13. The most troublesome problem encountered in this research was the interviewees understanding of how to develop the content and experiences on each level of education which involves all students.

14. Predominant opinions of the jury were that a core curriculum for agriculture and agribusiness for grades 1 - post-secondary was feasible.

15. A student preparing for education beyond the secondary level should not be trained to the extent as one who is planning to terminate his education at the secondary level.

Recommendations:

From a review of related literature and the implication of the data, certain areas were found needing change and/or improvement. These changes and implications are for incorporating agricultural subject content and experiences into the whole of career education and for the development of materials to better the instruction and learning experiences in the proposed core curriculum.

Recommendations for this report will be given in three different areas. These are: (1) recommendations for the curriculum; (2) recommendations for staffing; and (3) recommendations for teaching methodology.

First are the recommendations for the curriculum for agriculture and agribusiness. These are: (1) the following curriculum should be used as a model or guide in developing a comprehensive agricultural curriculum and experiences in Levels I, II, III, and IV.

ELEMENTARY LEVEL - CAREER AWARENESS
IN AGRICULTURE (GRADES K THROUGH 6)

ELEMENTARY PLANT SCIENCE

(1) Plants and the natural environment
(2) Plants as a source of food
(3) Plants as a thing of beauty
(4) Plants as an economic factor (wood, lumber, etc.)
(5) How plant life begins
(6) How plants grow
(7) Plants, man, and work

ELEMENTARY ANIMAL SCIENCE

(1) Animals and their relationship to man
(2) How animals are developed
(3) How animals get their food
(4) Differences in animals
(5) Uses of animals
(6) Animals, man, and work

ELEMENTARY SOIL SCIENCE

(1) The planet earth - what it is - how it came to be
(2) How soil is formed
(3) Our changing earth - causes of change
(4) The earth and its relation to life
(5) How soil supports animal and plant life
(6) What man has discovered about soil
(7) Man, soil, and work

ELEMENTARY ECONOMICS AND BUSINESS

(1) The kind of economic system we live under
(2) The meaning of a free market
(3) The meaning of money
(4) What money is used for
(5) How money is made
(6) Man, money, and WORK

ELEMENTARY AGRICULTURAL MECHANICS

(1) Learning about tools - kinds, use, etc.
(2) How tools came into being
(3) Tools of primitive man
(4) Man, tools, and work

ELEMENTARY LEADERSHIP DEVELOPMENT

(1) Meaning of leadership
(2) Why we have to have leaders in our society
(3) Kinds of leadership
(4) Identity of a few national, state, and local leaders
(5) How to recognize and follow good leadership
(6) Man, work, and leadership

87

JUNIOR HIGH SCHOOL LEVEL - EXPLORATION
(OF CAREERS IN AGRICULTURE GRADES 7-8)

CAREERS IN PLANT SCIENCE
(1) Kinds of occupations
(2) Levels of employment
(3) Nature of work
(4) Preparation needed for job entry
(5) Range in pay
(6) Hands-on and mind-on experiences

CAREERS IN ANIMAL SCIENCE
(1) Kinds of occupations
(2) Levels of employment
(3) Nature of work
(4) Preparation needed for job entry
(5) Range in pay
(6) Hands-on and mind-on experiences

CAREERS IN SOIL SCIENCE
(1) Kinds of occupations
(2) Levels of employment
(3) Nature of work
(4) Preparation needed for job entry
(5) Range in pay
(6) Hands-on and mind-on experiences

CAREERS IN AGRICULTURAL BUSINESSES
(1) Kinds of occupations
(2) Levels of employment
(3) Nature of work
(4) Preparation needed for job entry
(5) Range in pay
(6) Hands-on and mind-on experiences

CAREERS IN AGRICULTURAL LEADERSHIP
(1) Kinds of occupations
(2) Levels of employment
(3) Nature of work
(4) Preparation needed for job entry
(5) Range in pay
(6) Hands-on and mind-on experiences

CAREERS IN AGRICULTURAL MECHANICS
(1) Kinds of occupations
(2) Levels of employment
(3) Nature of work
(4) Preparation needed for job entry
(5) Range in pay
(6) Hands-on and mind-on experiences

SENIOR HIGH SCHOOL - BASIC PREPARATION
FOR AGRICULTURAL CAREERS (GRADES 9-12)

BASIC PRINCIPLES OF PLANT SCIENCE
(1) Classification of agricultural plants
(2) Identification of parts of plants and functions of each part

BASIC PRINCIPLES OF PLANT SCIENCE (continued)

(3) Understanding the reproduction systems and reproduction processes
(4) Plant growth - how it takes place
(5) Understanding plant nutrition
(6) Understanding plant diseases
(7) Insects that attack plants and their classification
(8) Identification and classification of weeds
(9) Weed control measures

BASIC PRINCIPLES OF ANIMAL SCIENCE

(1) Anatomy and physiology of farm animals
(2) Nutrition of farm animals
(3) Diseases of farm animals
(4) Common parasites of farm animals
(5) Environmental factors that affect physiology of animals

BASIC PRINCIPLES OF SOIL SCIENCE

(1) The nature and importance of soil
(2) How soils are classified
(3) Forces and processes of soil development
(4) Soil components - functions of each
(5) Meaning of soil productivity
(6) Meaning of soil pH
(7) Plant nutrients in the soil
(8) Commercial sources of plant nutrients
(9) Soil and the environment
(10) Definition and causes of erosion
(11) Soil drainage - how to distinguish between good and poor drainage

BASIC PRINCIPLES OF AGRICULTURAL BUSINESS MANAGEMENT

(1) The nature and importance of economic principles in agriculture
(2) Understanding economic factors that affect agriculture
(3) Factors affecting profits in agriculture
(4) Marketing - buying and selling
(5) Record keeping (accounting)
(6) Business law
(7) Agricultural policy

BASIC LEADERSHIP DEVELOPMENT

(1) The importance of integrity
(2) Principles of public speaking
(3) Fundamentals of parliamentary procedure
(4) Importance of committee actions
(5) How to conduct a public meeting

BASIC AGRICULTURAL MECHANICS

(1) How to care for tools
(2) How to fit tools and use them properly
(3) Oxy-acetylene welding
(4) Arc welding
(5) Concrete and masonry
(6) Power mechanics
(7) Painting, preserving, and finishing
(8) Making and interpreting drawings
(9) Wood and synthetics
(10) Plumbing
(11) Surveying
(12) Operating farm machinery
(13) Electricity
(15) Metals

POST-SECONDARY SUBJECT MATTER FOR
AGRICULTURE AND AGRIBUSINESS

PLANT SCIENCE

(1) Introduction (plants and our environment)
(2) Plant physiology, growth and reproductive processes
(3) Plant nutrition
(4) Common plant diseases and their control
(5) Common plant insects and their control
(6) Common weeds of row crops, pastures and available chemicals
(7) Laboratory experiences involving practical experiences to implement the theoretical base applied in group and individual instruction

ANIMAL SCIENCE

(1) Introduction
(2) Genetics and heredity
(3) Anatomy and physiology
(4) Nutrition and feed utilization
(5) Growth and development
(6) Animal products and by-products
(7) Animal health and sanitation
(8) Animal behavior
(9) Laboratory experiences should correlate with the subject matter

SOILS

(1) Introduction to soils
(2) Uses of soils by man

SOILS (continued)

(3) Recreational aspect of soils
(4) Emphasis of field laboratories (practical experience)
    A. Identifying and classification of area soils
    B. Judging of soils
    C. Developing plans for land use and practices

AGRICULTURAL BUSINESS MANAGEMENT

(1) Introduction
(2) Basic economic principles and definitions
(3) Agricultural statistics
(4) The making of prices
(5) Applied marketing
(6) Principles of production
(7) Returns (profits)
(8) Resource acquisition and use
(9) Applied firm management

LEADERSHIP DEVELOPMENT

(1) Organization and operation of our Constitutional government
(2) Basic principles of the operation of state government
(3) Understanding the organization, functions, and procedures of county government
(4) Importance of honesty and integrity in leadership
(5) Importance of patriotism to civic responsibility

AGRICULTURAL MECHANICS

(1) Technical oxy-acetylene welding
(2) Technical arc welding
(3) Technical concrete and masonry
(4) Technical power mechanics
(5) Technical painting, preserving, and finishing
(6) Technical making and interpreting drawings.
(7) Technical wood and synthetics
(8) Technical tool fitting
(9) Technical plumbing
(10) Technical surveying
(11) Technical operating machinery
(12) Technical soldering
(13) Technical electricity
(14) Technical metals

2. The individual economic and/or community needs and resources should be evaluated to provide a basis for emphasizing certain modules or items in that particular area.

3. Material (consisting of both content and experiences) should be prepared with the agricultural business management module receiving priority.

4. The model for curricular development for the secondary preparation period be followed and material and experiences organized using this as a basis (Model I).

5. The model for curricular development for the Agribusiness, Natural Resources and Environmental Control Occupations service area in career education be used as a guide for developing materials content and experiences for all levels of education (Model II).

6. The curriculum should be arranged in detailed modules for each level.

7. Future curriculum materials development activities should be designed to prepare subject matter content and/or experiences for the implementation of the Core Curriculum for Agribusiness, Natural Resources and Environmental Control Occupations on All Levels of Education (Grades 1 - Post-Secondary).

8. In attempting to implement new conepts of staffing for agricultural and agribusiness programs, staffing patterns utilizing aides, paraprofessionals, etc. should be evaluated.

9. If need for a differentiated staff is validated, one of the three suggested staffing models, (Models III, IV, V) depending on the situation should be utilized.

10. Experiences and/or outcomes should be developed in preparing the student for placement after completion of training.

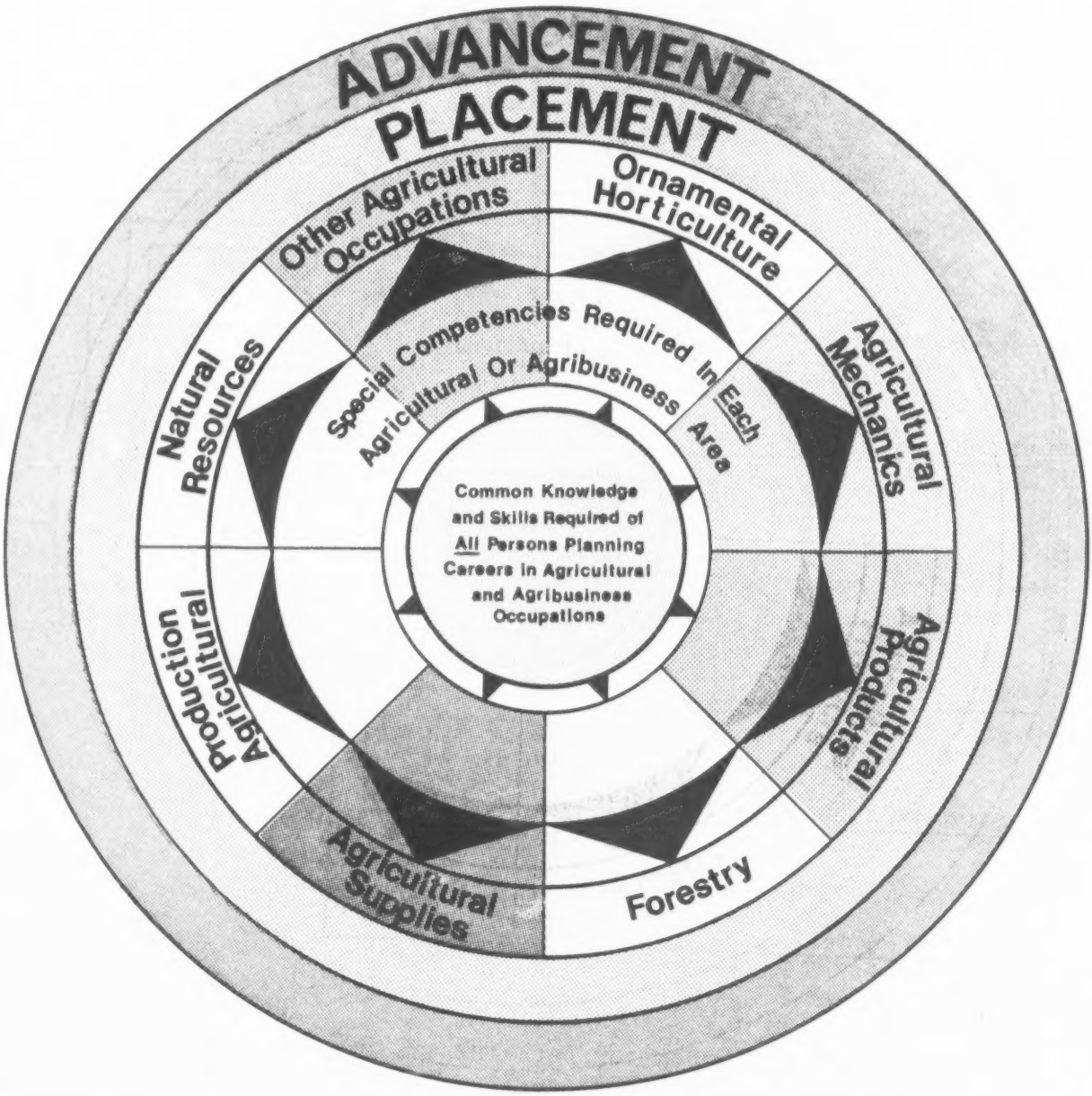
11. Curricular content should be developed utilizing experiences with the following teaching techniques for attainment of objectives. These are: (1) programmed instruction; (2) project method, and (3) land laboratories.

12. Future research concerning core curriculums for Agribusiness, Natural Resources, and Environmental Control Occupations should be conducted to determine appropriate content for each module. In designing such research, it is recommended that interviewees should be carefully screened as to their competence in their occupational areas and/or choices. The project staff hypothesis is that the best approach would be job analysis.

The project staff believes that if the preceding recommendations are followed that the implementation of the Agribusiness, Natural Resources, and Environmental Control Occupations service area in career education could be effective and efficient.

Curriculum Model for Agricultural and Agribusiness Occupations

Model 1



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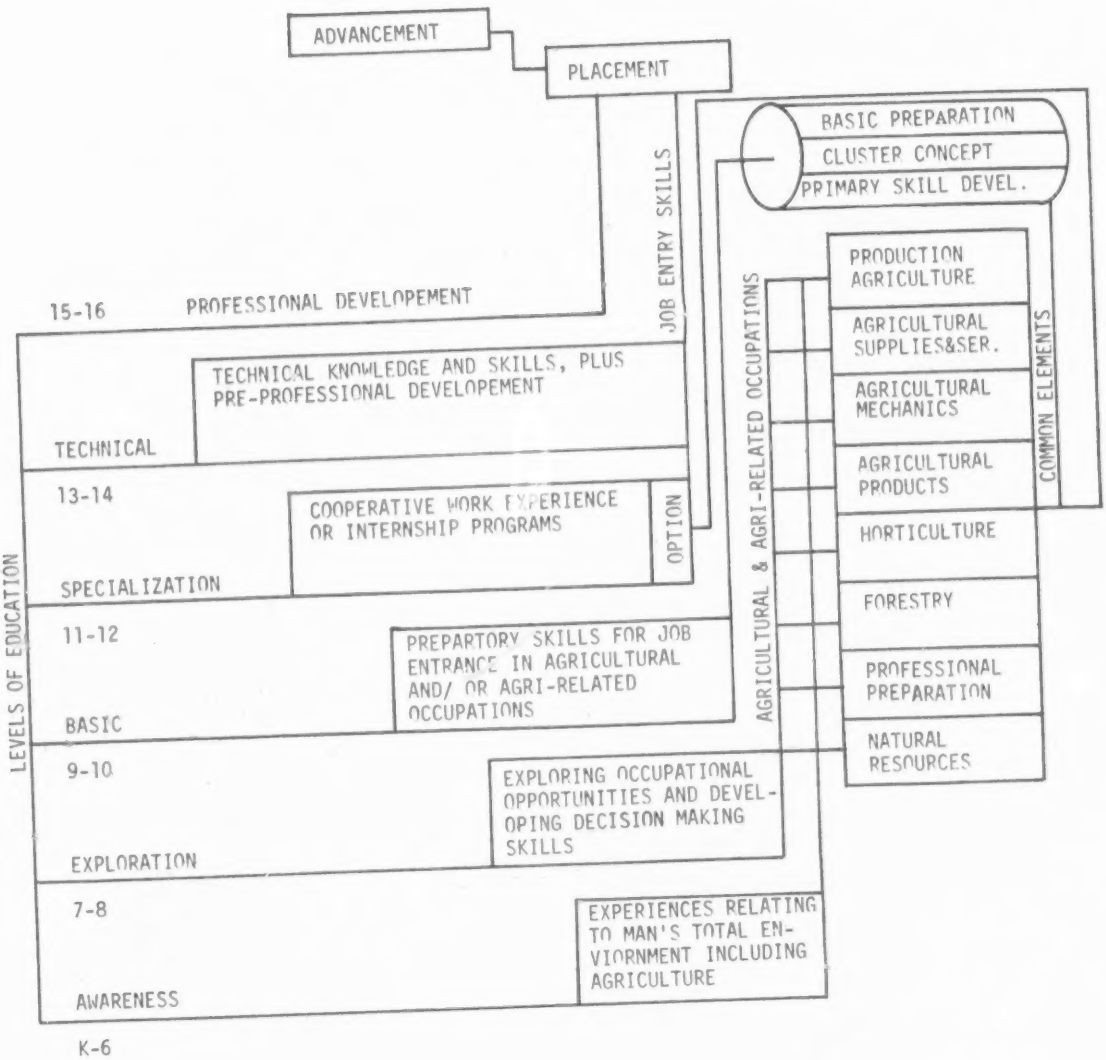
Curriculum Model for Agribusiness, Natural Resources, and Enviornmental Occupations

Model 2



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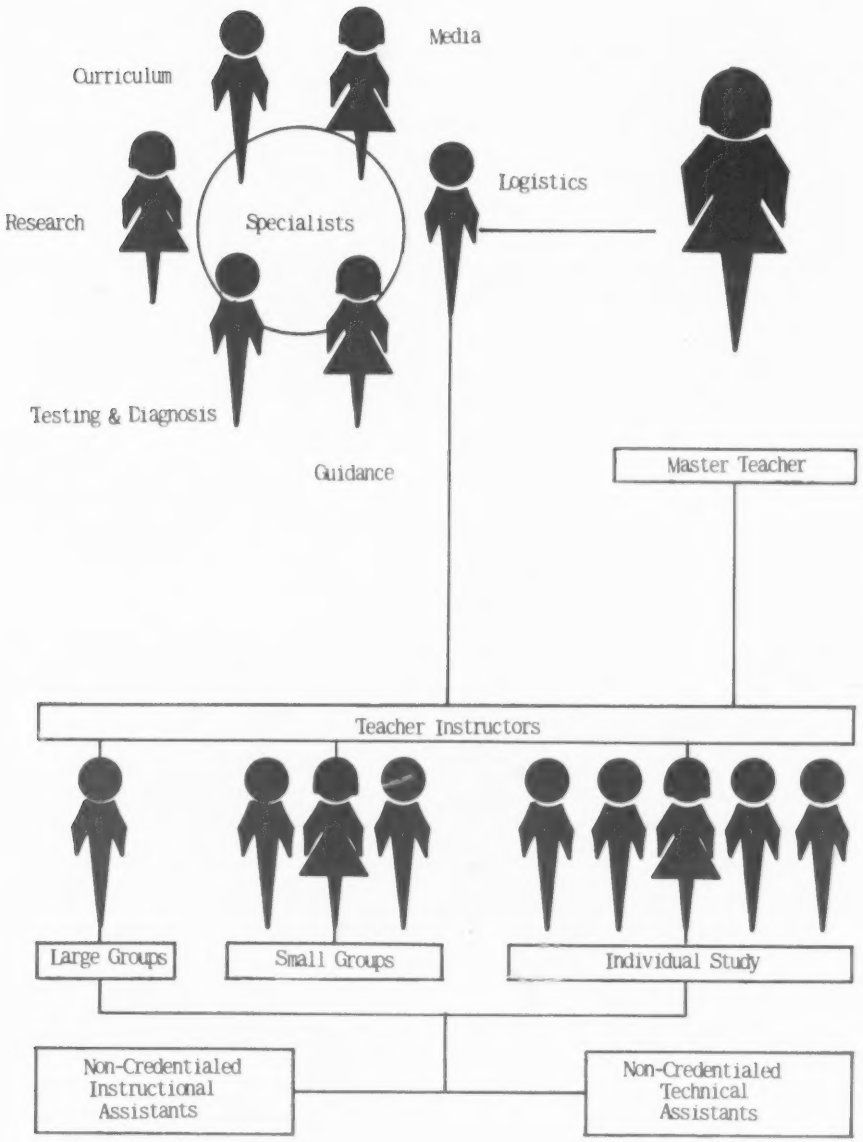
MISSISSIPPI STATE UNIVERSITY

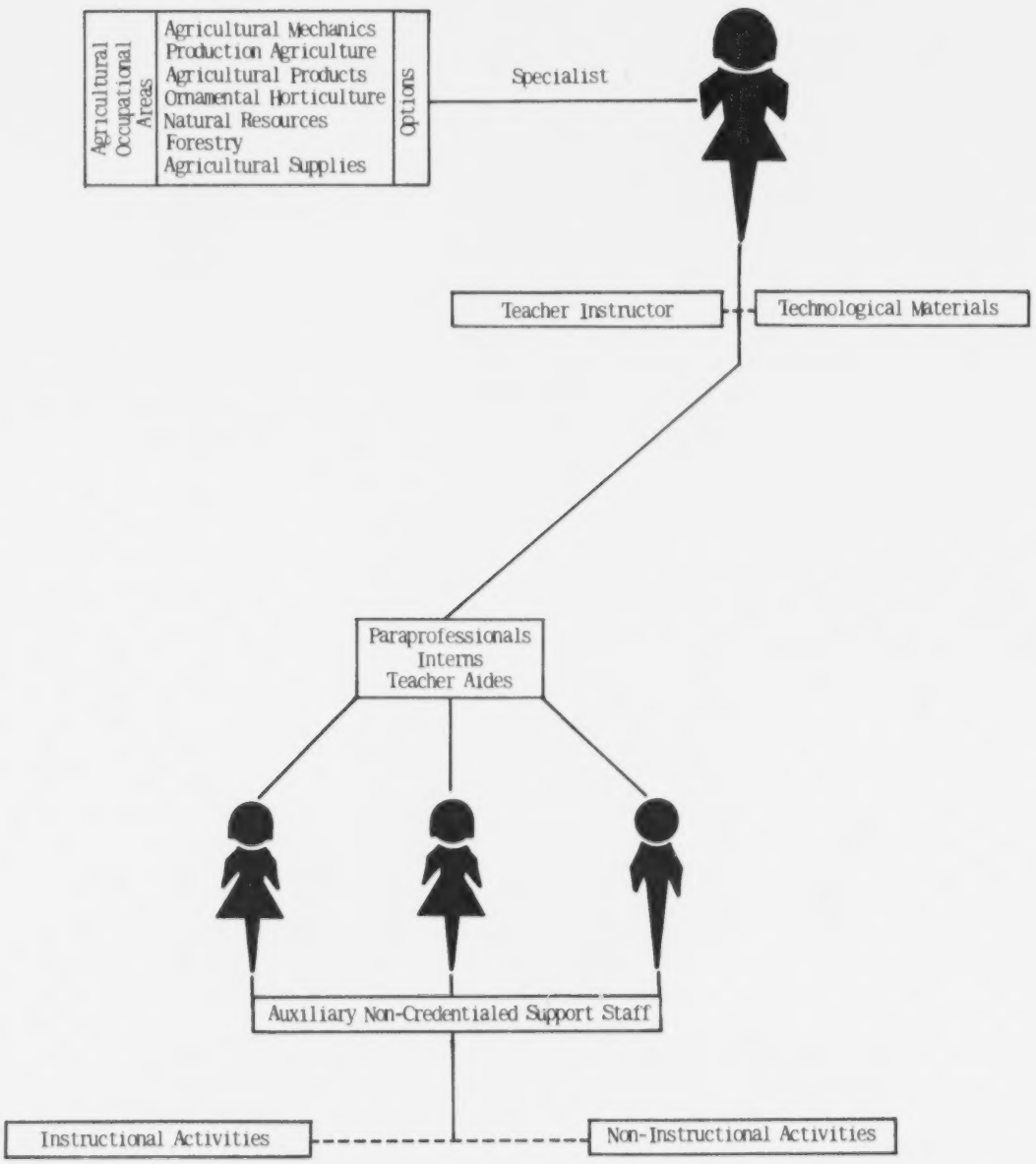
Schematic Diagram of Differentiated Staffing Patterns

(Model 3) *



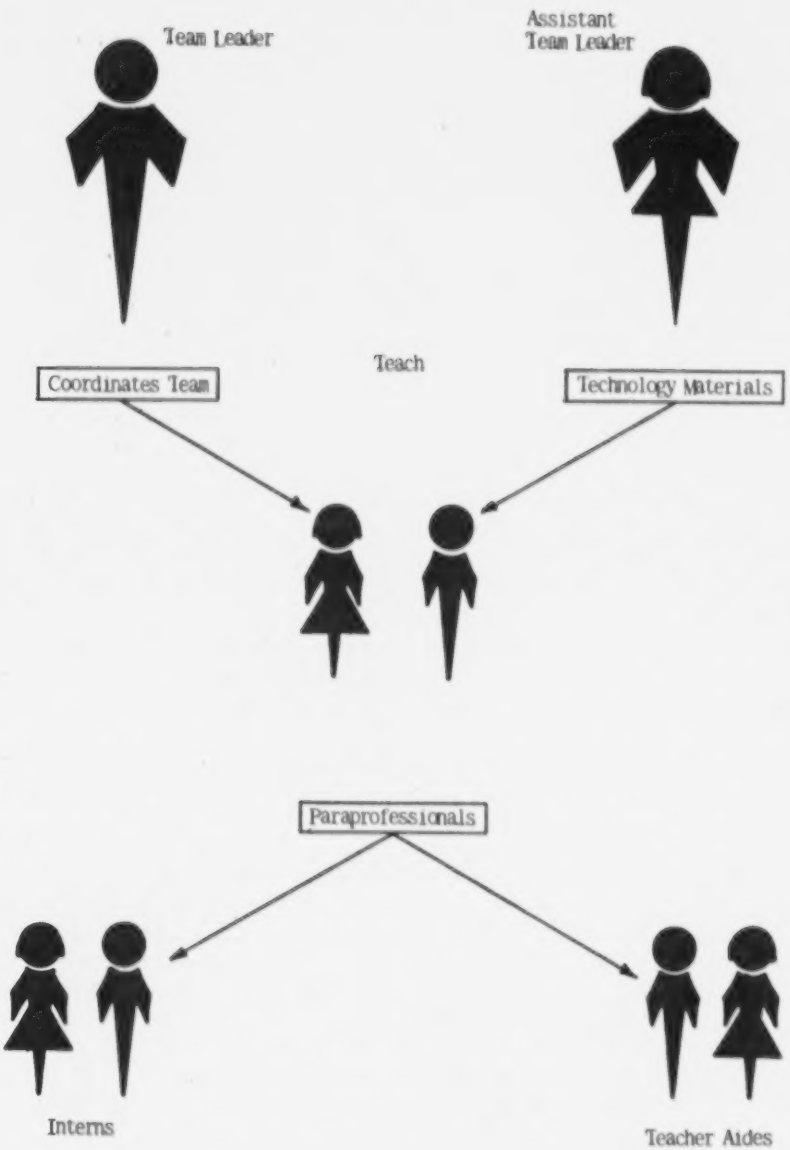
* Adapted from: Second annual National Vocational Technical Teacher Education Seminar Proceedings; The Center for V ocational and Technical Education; Ohio State University. (1968) p. 58

Schematic Diagram
(Model 4) *



*Adapted from: Second annual National Vocational Technical Teacher Education Seminar Proceedings; The Center for Vocational and Technical Education; Ohio State University. (1969) p. 58.

Schematic Diagram
(Model 5) *



* Adapted from: Second Annual National Vocational Technical Teacher Education Seminar Proceedings; The Center for Vocational and Technical Education; Ohio State University (1968) p. 56

IV. GLOSSARY OF TERMS

Agribusiness - Any business that in some way relates to agriculture, either directly or indirectly.

Agribusiness, Natural Resources and Environmental Control Occupations Education - The name designated by the Office of Education for the program formerly called vocational agriculture.

Awareness Period - A time element within the career education concept, denoting grades K-6 of the traditional school organization. This denotes the segment of education for orienting the students to their total environment. It should serve as a time devoted to awakening the interest areas of the student, while molding wholesome attitudes and images toward himself and society.

Career Education - A series of experiences, decisions, and interactions, which taken cumulatively, results in the formulation of a vocational self-concept and provide the means by which that self-concept can be realized.[1]

Core Curriculum - Common knowledge and skill areas around which all other related subject matter and/or experiences can be grouped for a particular discipline.

Differentiated Staffing - The method for using persons with different and/or varying performance levels of special skills to make up a teaching team.

Exploration Period - A time element within the career education concept denoting grades 7-8 and sometimes grade 9 of the traditional school organization. This denotes the segment of education used to explore the student's occupational interest areas, while developing certain decision making skills.

Hands-On-Experience - Manipulative application and exploration of various snythetic and real experiences.

Levels - The groupings of one or more traditional grades within the organization of the school.

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[1] Law, Gordon F., "Research and Implementation in Vocational Education," American Vocational Association, (Washington: American Vocational Association Incorporated, March, 1969), p. 18.

GLOSSARY OF TERMS (continued)

Minds-On-Experiences - A series of experiences that causes the learner to apply the scientific method to the learning process.

Module - A concise grouping of related materials and experiences to enhance the teaching-learning process.

Post-Secondary Period - A time element within career education denoting the post-high school period. This segment of the education concept is devoted to developing specialized and/or technical competencies, or pre-professional development in the occupation chosen by the student.

Preparation Period - A time element within the career education concept denoting grades 10-12 of the traditional school organization. This indicates the segment of education for developing primary competencies for both job entry and environmental maintenance which is labeled by some proponents of career education as " ... skills to live by."

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APPENDICES

APPENDIX A

MISSISSIPPI STATE UNIVERSITY

DEPARTMENT OF AGRICULTURAL EDUCATION
P. O. DRAWER AV
STATE COLLEGE, MISSISSIPPI 39762

June 15, 1972

John Doe
123 Any Avenue
Any City, Mississippi

Dear Sir:

The Agricultural Education Department at Mississippi State University, in cooperation with the Division of Vocational and Technical Education, State Department of Education, is making a comprehensive study of the educational needs of individuals engaged in or preparing to engage in the agricultural sector of our economy. This is a massive attack on a troublesome problem that has been plaguing individuals who are charged with developing curricula content for agricultural education.

A random sample of agriculturally related businesses, school systems, and farms has been drawn. Your (business, school system, farm) has been drawn as part of the sample group. Therefore, we need to know whether you are willing to participate in this study. To facilitate letting us know of your decision, you are requested to sign and return by return mail the self-addressed post card indicating your decision by placing a check mark in the appropriate space. Your participation in the project will be to complete a three (3) page questionnaire dealing with curriculum content for agricultural education.

Mr. Glenn Shoemake, a research associate in Agricultural Education at Mississippi State University, is responsible for collecting, summarizing and evaluating the data obtained from those who participate in the study. If you decide to cooperate with us, you will be contacted by Mr. Shoemake for the purpose of setting a definite time for an interview, which will take approximately one hour of your time. With your help and cooperation, we believe that we can improve our resources and design a more appropriate curriculum for agriculture and agribusiness. When such resources as are used in this study are analyzed and evaluated, it is hoped that the labor force engaged in the agricultural sector of the economy will be improved. We need your help and are expressing our appreciation in advance for any assistance you might give us.

Sincerely yours,

Obed L. Snowden

Obed L. Snowden
Professor and Head
Project Director

APPENDIX B

Appendix B

FORM # 1

A QUESTIONNAIRE ON AGRIBUSINESS PERSONNEL'S VIEWS OF VOCATIONAL AGRICULTURE CURRICULUM IN MISSISSIPPI

The first section of this questionnaire pertains to general characteristics of agribusiness personnel. All information will be confidential and individuals will NOT be identified in the research.

SECTION A: Agribusiness Personnel's Characteristics

Check appropriate response for each question.

A. Name of Employer: _____

6-7 B. County:

( ) 1. Leflore
( ) 2. Tunica
( ) 3. Holmes
( ) 4. Yalobusha
( ) 5. Franklin
( ) 6. Hinds
( ) 7. Pontotoc
( ) 8. Union
( ) 9. Monroe
( ) 10. Lawrence
( ) 11. Rankin
( ) 12. Walthall
( ) 13. Lauderdale
( ) 14. Winston
( ) 15. Pearl River
( ) 16. Jackson
( ) 17. Other (specify) _____

8 C. Interviewee's Position Is Classified:

( ) 1. Professional
( ) 2. Technical
( ) 3. Managerial
( ) 4. Supervisory
( ) 5. Sales
( ) 6. Clerical
( ) 7. Skilled Labor
( ) 8. Semi-skilled
( ) 9. Unskilled

9 D. Area of Employment:

( ) 1. Production agriculture
( ) 2. Agricultural supplies/ services
( ) 3. Agricultural products
( ) 4. Agricultural mechanics
( ) 5. Ornamental horticulture
( ) 6. Agricultural resources
( ) 7. Forestry
( ) 8. Other (specify) _____

10 E. Type of Job Training:

( ) 1. On-job-training
( ) 2. Vocational agriculture in high school
( ) 3. Training in secondary technical school
( ) 4. Training in post secondary trade school
( ) 5. Other (specify) _____

11 F. Background:

( ) 1. Farm
( ) 2. Rural non-farm
( ) 3. Urban-town

FORM # 2

A QUESTIONNAIRE ON SCHOOL PERSONNEL'S VIEWS OF VOCATIONAL AGRICULTURE CURRICULUM IN MISSISSIPPI

The first section of this questionnaire pertains to general characteristics of school personnel. All information will be confidential and individuals will NOT be identified in the research.

SECTION A: School Personnel's Characteristics

Check appropriate response for each question.

A. Name of Employer _____

6-7 B. County:

( ) 1. Leflore
( ) 2. Tunica
( ) 3. Holmes
( ) 4. Yalobusha
( ) 5. Franklin
( ) 6. Hinds
( ) 7. Pontotoc
( ) 8. Union
( ) 9. Monroe
( ) 10. Lawrence
( ) 11. Rankin
( ) 12. Walthall
( ) 13. Lauderdale
( ) 14. Winston
( ) 15. Pearl River
( ) 16. Jackson
( ) 17. Other (specify) _____

8 C. Position of Interviewee:

( ) 1. Superintendent
( ) 2. Principal
( ) 3. Vo-ag teacher
( ) 4. Other (specify)_____

9 D. Type of School System:

( ) 1. County unit system under 1500 pupils
( ) 2. County unit system 1501 or more pupils
( ) 3. Separate school district under 1500 pupils
( ) 4. Separate school district 1501 or more pupils

10 E. Size of Attendance Center (if applicable):

( ) 1. Attendance center under 600 pupils
( ) 2. Attendance center 601-900 pupils
( ) 3. Attendance center 901-or more pupils

11 F. Background:

( ) 1. Farm
( ) 2. Rural nonfarm
( ) 3. Urban-town

FORM # 3

A QUESTIONNAIRE ON STUDENTS' VIEWS OF VOCATIONAL AGRICULTURE CURRICULUM IN MISSISSIPPI

The first section of this questionnaire pertains to general characteristics of the student. All information will be confidential and individual students will NOT be identified in the research.

SECTION A: High School Student's Characteristics

Check appropriate response for each question.

A. Name of School _____

6-7 B. County:

( ) 1. Leflore
( ) 2. Tunica
( ) 3. Holmes
( ) 4. Yalobusha
( ) 5. Franklin
( ) 6. Hinds
( ) 7. Pontotoc
( ) 8. Union
( ) 9. Monroe
( ) 10. Lawrence
( ) 11. Rankin
( ) 12. Walthall
( ) 13. Lauderdale
( ) 14. Winston
( ) 15. Pearl River
( ) 16. Jackson
( ) 17. Other (specify) _____

8 C. Number of years of vocational agriculture:

( ) 1. 1 year
( ) 2. 2 years
( ) 3. 3 years or more

9 D. Background:

( ) 1. Farm
( ) 2. Rural nonfarm
( ) 3. Urban-town

10 E. Agricultural experience:

( ) 1. Full-time farm
( ) 2. Part-time farm
( ) 3. Agribusiness
( ) 4. Other (specify) _____

FORM # 4

A QUESTIONNAIRE OF FARMERS' VIEWS OF VOCATIONAL AGRICULTURE CURRICULUM IN MISSISSIPPI

The first section of this questionnaire pertains to general characteristics of the farmer. All information will be confidential and individual farmers will NOT be identified in the research.

SECTION A: Farmers' Characteristics

Check appropriate response for each question.

6-7 A. County:

( ) 1. Leflore
( ) 2. Tunica
( ) 3. Holmes
( ) 4. Yalobusha
( ) 5. Franklin
( ) 6. Hinds
( ) 7. Pontotoc
( ) 8. Union
( ) 9. Monroe
( ) 10. Lawrence
( ) 11. Rankin
( ) 12. Walthall
( ) 13. Lauderdale
( ) 14. Winston
( ) 15. Pearl River
( ) 16. Jackson
( ) 17. Other (specify) _____

8 B. Type of Farm (primary enterprise):

( ) 1. Beef cattle
( ) 2. Dairy cattle
( ) 3. Row crops
( ) 4. Truck crops
( ) 5. Catfish
( ) 6. Swine
( ) 7. Tree
( ) 8. Poultry
( ) 9. Other (specify) _____

9 C. Size of Farm:

( ) 1. Less than 100 acres
( ) 2. 101-200 acres
( ) 3. 201-300 acres
( ) 4. 301-400 acres
( ) 5. 401-500 acres
( ) 6. Above 501 acres

10 D. Years of vo-ag while in high school:

( ) 1. None
( ) 2. 1 year
( ) 3. 2 years
( ) 4. 3 years or more

11 E. Background:

( ) 1. Farm
( ) 2. Rural nonfarm
( ) 3. Urban-town

APPENDIX C

Appendix C

SECTION B: Ratings of Agricultural Subject Matter Areas

Each item in the following form should be rated by placing an "X" in two of the six columns. There are two areas of importance (1) Job Performance, (2) Home Maintenance. Please rate each area separately.

SUBJECT MATTER AREAS	LEVELS OF IMPORTANCE IN PERFORMANCE OF JOB			IN MAINTAINING HOME AND ENVIRONMENT		
	ESSENTIAL 3	USEFUL 2	NONE 1	ESSENTIAL 3	USEFUL 2	NONE 1
A. Animal Science						
12. Anatomy and physiology						
13. Genetics (Heredity)						
14. Nutrition						
15. Management						
16. Diseases & parasites						
17. Other (specify)						
18. Other (specify)						
B. Plant Science						
19. Identification and classification						
20. Plant nutrition						
21. Cultivation						
22. Harvesting						
23. Identification and causes of diseases						
24. Identification and controls of insects						
25. Plant physiology and reproduction						
26. Other (specify)						
27. Other (specify)						

SECTION B (Continued)

SUBJECT MATTER AREAS	LEVELS OF IMPORTANCE IN PERFORMANCE OF JOB			LEVELS OF IMPORTANCE IN MAINTAINING HOME AND ENVIRONMENT		
	ESSENTIAL 3	USEFUL 2	NONE 1	ESSENTIAL 3	USEFUL 2	NONE 1
C. Soil Science						
28. Soil classification and land use						
29. Soil productivity						
30. Soil components						
31. Cropping practices						
32. Drainage						
33. Irrigation						
34. Other (specify)						
35. Other (specify)						
D. Agricultural Business Management						
36. Basic principles of economics						
37. Budgeting						
38. Marketing (buying and selling)						
39. Business law and policy						
40. Accounting and money management						
41. Other (specify)						
42. Other (specify)						
E. Leadership Development						
43. Committee work						
44. Parliamentary procedure						
45. Public speaking						
46. Other (specify)						
47. Other (specify)						

SECTION B (Continued)

SUBJECT MATTER AREAS	LEVELS OF IMPORTANCE IN PERFORMANCE OF JOB			LEVELS OF IMPORTANCE IN MAINTAINING HOME AND ENVIRONMENT		
	ESSENTIAL 3	USEFUL 2	NONE 1	ESSENTIAL 3	USEFUL 2	NONE 1
F. Agricultural Mechanics						
48. Oxy-acetylene welding (Procedure for selection and use of equipment, welding, cutting, brazing, fuse welding, safety precautions, etc.)						
49. Arc welding (Selection, operation and maintenance of equipment, determining kinds of welds, metals, electrodes, amperage setting, etc. for various jobs.)						
50. Concrete and masonry (Estimating kind and amounts concrete and materials. Forming, placing, finishing, curing concrete. Laying out building, tool identification, and use, etc.)						
51. Power mechanics (Fundamental processes involved with mechanical principles of engines, tool identification and use, etc.)						

SECTION B (Continued)

SUBJECT MATTER AREAS	LEVELS OF IMPORTANCE IN PERFORMANCE OF JOB			LEVELS OF IMPORTANCE IN MAINTAINING HOME AND ENVIRONMENT		
	ESSENTIAL 3	USEFUL 2	NONE 1	ESSENTIAL 3	USEFUL 2	NONE 1
F. Agricultural Mechanics (continued)						
52. Painting, preserving, and finishing (Kinds, grades, and uses of paints, and preservatives. Preparing surfaces and selecting kinds of stain, varnish, shellac, glue, etc.)						
53. Making and interpreting drawings (Laying out, scaling, and drawing building plans. Reading blueprints, etc.)						
54. Wood and snythetics (Kinds, uses, and grades of lumber. Identifying, using, and adapting various building materials for today and the future.)						
55. Tool fitting (Cleaning, adjusting, using, repairing, and maintenance of various tools.)						
56. Plumbing (Identification and uses of tools, plumbing fittings, fixtures, working with different kinds of pipe, planning and laying out a plumbing system, etc.)						

SECTION B (Continued)

SUBJECT MATTER AREAS	LEVELS OF IMPORTANCE IN PERFORMANCE OF JOB			LEVELS OF IMPORTANCE IN MAINTAINING HOME AND ENVIRONMENT		
	ESSENTIAL 3	USEFUL 2	NONE 1	ESSENTIAL 3	USEFUL 2	NONE 1
F. Agricultural Mechanics (continued)						
57. Surveying (Reading and using leveling instruments, flag, chain, etc. Fundamental processes involved in land leveling, ditching, etc.)						
58. Operating farm machinery (Using, adjusting, maintaining farm tractors, implements, small engines, etc.)						
59. Soldering (Proper uses, jobs, procedures in different types of soldering, maintaining equipment, etc.)						
60. Electricity (Characteristics of electric current, conductors, functions of and kinds of circuits, switches, and outlets. Identification and uses of tools, safety precautions in wiring, etc.)						
61. Metals (Identifying types, grades, characteristics of metals. Cuting shaping, fastening, various kinds of metals.						
62. Other (specify)						
63. Other (specify)						

APPENDIX D

Appendix D

The following is an instrument to measure your thoughts toward different staffing patterns and techniques of teaching in a variety of situations. Please rate the following situations as to the degree of efficiency and workability you think each item would create. A summary of your reactions will be our recommendations for staffing patterns and teaching techniques for both new and redirected programs of vocational agriculture in Mississippi.

The rating scale to be used in the following form is as follows:

5 = strongly agree

4 = agree

3 = neutral

2 = disagree

1 = strongly disagree

NAME _____

Each item in the following form should be rated by placing an "X" in one of the five columns which indicates your responses. On the scale 5 is the highest rating, 3 is the average or neutral rating, and 1 denotes the lowest rating. Please respond only once for each item.

	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
PART I. Staffing patterns for Agricultural Education in Mississippi.					
1. A one teacher vo-ag department could coordinate teaching of all agricultural subject matter plus carrying out all supervisory and other community activities effectively.					
2. A two teacher vo-ag department could teach all agricultural subject matter, provide supervision, and carry out all other duties effectively by dividing their time equally.					
3. One teacher and a teacher aide who is in charge of non-instructional activities could teach all agricultural subject matter and carry out all other duties of the department effectively.					

	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
4. An agricultural teaching team with a team leader, and assistant team leader, teachers and paraprofessionals could coordinate the teaching of all agricultural subject matter, provide the supervision and carry out all other functions of a vocational complex.					
5. A curriculum council, plus a curriculum associate to supervise the senior teachers who coordinate the instruction of associate teachers aided by paraprofessionals and teacher aides could effectively implement and carry out a total program of vocational education in a school system.					
6. A curriculum council composed of specialists who develop curricular materials, tests, etc. and a master teacher who supervises the teacher instructors who are aided by non-credentialed instructional and technical assistants could effectively implement and carry out a total program of vocational education in a school system.					

	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
7. A state-wide program specialist for each agricultural service area to coordinate all the instructional process for all agriculture programs could be effective.					
8. A district agricultural curriculum materials specialist could coordinate the teaching of all agricultural subject matter.					
9. An agricultural program should have Technology specialists teaching in each subject matter area taught.					

	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
PART II. Methods for teaching agriculture and agri-related occupations in Mississippi.					
1. The lecture method is an effective method of teaching elementary, junior high, secordary, and post-secondary students.					
2. Programmed instruction could be effectively implemented in specialized training areas of agriculture.					
3. Programmed instruction could be implemented in exploring agricultural occupations for the junior high level.					
4. Programmed instruction could be effectively implemented in making elementary children aware of agriculture.					
5. The project method of instruction could be an effective method of teaching elementary grades about agriculture.					
6. Land laboratories could effectively enhance learning experiences of secondary students.					

	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
7. Land laboratories could effectively enhance learning experiences of junior high students.					
8. Land laboratories could effectively enhance learning experiences of elementary students.					
9. Arranging the curriculum in small detailed units for each level of education could make the teaching process more effective.					

APPENDIX E

Appendix E

RATING SCALE FOR REACTION PANEL

Career Education is the "in" term for describing education today. This concept champions the idea that school curriculums must be redirected in a effort to help "eliminate the artificial separation between things academic and things vocational."

The Career Education model developed by the Office of Education, U.S. Department of Health, Education, and Welfare is somewhat as follows:

Grades K-6 is designated as the Career Awareness Period.
Grades 7-8 is designated as the Career Exploration Period.
Grades 9-12 is designated as the Preparatory Period for job entry or continuing education.
Post-secondary programs are designated as providing technical and professional education for job entry.

Agriculture, being one of the career fields that utilizes scientific, economic, mechanical, and leadership knowledge and skills must have a "core" of subject matter in the school curriculum, running from K through post-secondary levels of education.

Listed on the following pages are areas of subject matter to be taught on each level of education. Under each subject matter area is listed units which everyone should be taught.

You are requested to respond to each item as if it were a positive statement. There is a rating scale to the right of the items. Indicate your agreement or disagreement by placing an (X) in one (only one) of the columns.

PLEASE READ AND FOLLOW THE ABOVE INSTRUCTIONS CAREFULLY.

ELEMENTARY LEVEL - CAREER AWARENESS
IN AGRICULTURE (GRADES K THROUGH 6)

Knowledge and Skill Areas	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
A. ELEMENTARY PLANT SCIENCE					
(1) Plants and the natural environment.					
(2) Plants as a source of food.					
(3) Plants as a thing of beauty.					
(4) Plants as an economic factor (wood, lumber, etc.)					
(5) How plant life begins.					
(6) How plants grow.					
(7) Plants, man, and WORK					
B. ELEMENTARY ANIMAL SCIENCE					
(1) Animals and their relationship to man.					
(2) How animals are developed.					
(3) How animals get their food.					
(4) Differences in animals.					
(5) Uses of animals.					
(6) Animals, man, and WORK					
C. ELEMENTARY SOIL SCIENCE					
(1) The planet earth - what it is - how it came to be.					
(2) How soil is formed.					
(3) Our changing earth - causes of change.					
(4) The earth and its relation to life.					
(5) How soil supports animal and plant life.					
(6) What man has discovered about soil.					
(7) Man, soil, and WORK.					

	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
D. ELEMENTARY ECONOMICS AND BUSINESS					
(1) The kind of economic system we live under.					
(2) The meaning of a free market.					
(3) The meaning of money.					
(4) What money is used for.					
(5) How money is made.					
(6) Man, money, and WORK.					
E. ELEMENTARY LEADERSHIP DEVELOPMENT					
(1) Meaning of leadership.					
(2) Why we have to have leaders in our society.					
(3) Kinds of leadership.					
(4) Identity of a few national, state, and local leaders.					
(5) How to recognize and follow good leadership.					
(6) Man, work, and leadership.					
F. ELEMENTARY AGRICULTURAL MECHANICS					
(1) Learning about tools - kinds, use, etc.					
(2) How tools came into being.					
(3) Tools of primitive man.					
(4) Man, tools, and WORK.					

JUNIOR HIGH SCHOOL LEVEL - EXPLORATION
(OF CAREERS IN AGRICULTURE (GRADES 7-8)

Knowledge and Skill Areas	strongly agree	agree	neutral	disagree	strongly disagree
A. CAREERS IN PLANT SCIENCE	5	4	3	2	1
(1) Kinds of occupations.					
(2) Levels of employment.					
(3) Nature of work.					
(4) Preparation needed for job entry.					
(5) Range in pay.					
(6) Hands on and mind on experiences.					
B. CAREERS IN ANIMAL SCIENCE					
(1) Kinds of occupations.					
(2) Levels of employment.					
(3) Nature of work.					
(4) Preparation needed for job entry.					
(5) Range in pay.					
(6) Hands on and mind on experiences.					
C. CAREERS IN SOIL SCIENCE					
(1) Kinds of occupations.					
(2) Levels of employment.					
(3) Nature of work.					
(4) Preparation needed for job entry.					
(5) Range in pay.					
(6) Hands on and mind on experiences.					
D. CAREERS IN AGRICULTURAL BUSINESSES					
(1) Kinds of occupations.					
(2) Levels of employment.					
(3) Nature of work.					
(4) Preparation needed for job entry.					
(5) Range in pay.					
(6) Hands on and mind on experiences.					

	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
E. CAREERS IN AGRICULTURAL LEADERSHIP					
(1) Kinds of occupations.					
(2) Levels of employment.					
(3) Nature of work.					
(4) Preparation needed for job entry.					
(5) Range in pay.					
(6) Hands on and mind on experiences.					
F. CAREERS IN AGRICULTURAL MECHANICS					
(1) Kinds of occupations.					
(2) Levels of employment.					
(3) Nature of work.					
(4) Preparation needed for job entry.					
(5) Range in pay.					
(6) Hands on and mind on experiences.					

SENIOR HIGH SCHOOL - BASIC PREPARATION
FOR AGRICULTURAL CAREERS (GRADES 9-12)

Knowledge and Skill Areas	strongly agree 5	agree 4	neutral 3	disagree 2	strongly disagree 1
A. BASIC PRINCIPLES OF PLANT SCIENCE					
(1) Classification of agricultural Plants.					
(2) Identification of parts of plants, and functions of each part.					
(3) Understanding the reproduction systems and reproduction processes.					
(4) Plant growth - how it takes place.					
(5) Understanding plant nutrition.					
(6) Understanding plant diseases.					
(7) Insects that attack plants and their classification.					
(8) Identification and classification of weeds.					
(9) Weed control measures.					
B. BASIC PRINCIPLES OF ANIMAL SCIENCE					
(1) Anatomy and physiology of farm animals.					
(2) Nutrition of farm animals.					
(3) Diseases of farm animals.					
(4) Common parasites of farm animals.					
(5) Environment factors that affect physiology of animals.					

	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
C. BASIC PRINCIPLES OF SOIL SCIENCE					
(1) The nature and importance of soil.					
(2) How soils are classified.					
(3) Forces and processes of soil development.					
(4) Soil components - functions of each.					
(5) Meaning of soil productivity.					
(6) Meaning of soil pH.					
(7) Plant nutrients in the soil.					
(8) Commercial sources of plant nutrients.					
(9) Soil and the environment.					
(10) Definition and causes of erosion.					
(11) Soil drainage - how to distinguish between poor & good drainage.					
D. BASIC PRINCIPLES OF BUSINESS MANAGEMENT					
(1) The nature and importance of economic principles in agriculture.					
(2) Understanding economic factors that affect agriculture.					
(3) Factors affecting profits in agriculture.					
(4) Marketing - buying and selling.					

	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
D. BASIC PRINCIPLES OF BUSINESS MANAGEMENT (cont.)					
(5) Record keeping (accounting).					
(6) Business law.					
(7) Agricultural policy.					
E. BASIC LEADERSHIP DEVELOPMENT					
(1) The importance of integrity.					
(2) Principles of public speaking.					
(3) Fundamentals of parliamentary procedure.					
(4) Importance of committee actions.					
(5) How to conduct a public meeting.					
F. BASIC AGRICULTURAL MECHANICS					
(1) How to care for tools.					
(2) How to fit tools and use them properly.					
(3) Oxy-acetylene welding.					
(4) Arc welding.					
(5) Concrete and concrete masonry.					
(6) Power mechanics.					
(7) Painting, preserving, and finishing.					
(8) Making and interpreting drawings.					
(9) Wood and synthetics.					
(10) Plumbing.					
(11) Surveying.					
(12) Operatingfarm machinery					
(13) Soldering.					
(14) Electricity.					
(15) Metals.					

POST-SECONDARY SUBJECT MATTER FOR
AGRICULTURE AND AGRIBUSINESS

Knowledge and Skill Areas	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
A. PLANT SCIENCE					
(1) Introduction (plants and our environment).					
(2) Plant physiology, growth & reproductive processes.					
(3) Plant nutrition.					
(4) Common plant diseases and their control.					
(5) Common plant insects and their control.					
(6) Common weeds of row crops, pastures and available chemicals for their control.					
(7) Laboratory experiences involving practical experiences to implement the theoretical base applied in group and individual instruction.					
B. ANIMAL SCIENCE					
(1) Introduction.					
(2) Genetics and heredity.					
(3) Anatomy and physiology.					
(4) Nutrition and feed utilization.					
(5) Growth and development.					
(6) Animal products and by-products.					
(7) Animal health and sanitation.					
(8) Animal behavior.					
(9) Laboratory experiences should correlate with the subject matter.					

	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
C. SOILS					
(1) Introduction to soils.					
(2) Uses of soils by man.					
(3) Recreational aspect of soils.					
(4) Emphasis of field labs (practical experience).					
A. Identifying and classification of area soils.					
B. Judging of soils.					
C. Developing plans for land use and practices.					
D. AGRICULTURAL BUSINESS MANAGEMENT					
(1) Introduction.					
(2) Basic economic principles and definitions.					
(3) Agricultural statistics.					
(4) The making of prices.					
(5) Applied marketing.					
(6) Principles of production.					
(7) Returns (profits).					
(8) Resource acquisition and use.					
(9) Applied firm management.					
E. LEADERSHIP DEVELOPMENT					
(1) Organization and operation of our Constitutional government.					
(2) Basic principles of the operation of state government.					
(3) Understanding the organization and functions and procedures of county government.					

	strongly agree	agree	neutral	disagree	strongly disagree
	5	4	3	2	1
E. LEADERSHIP DEVELOPMENT (cont.)					
(4) Importance of honesty and integrity in leadership positions.					
(5) Importance of patriotism to civic responsibility.					
F. AGRICULTURAL MECHANICS					
(1) Technical oxy-acetylene welding.					
(2) Technical arc welding.					
(3) Technical concrete and masonry.					
(4) Technical power mechanics.					
(5) Technical painting, preserving, and finishing.					
(6) Technical making and interpreting drawings.					
(7) Technical wood and synthetics.					
(8) Technical tool fitting.					
(9) Technical plumbing.					
(10) Technical surveying.					
(11) Technical operating farm machinery.					
(12) Technical soldering.					
(13) Technical electricity.					
(14) Technical metals.					